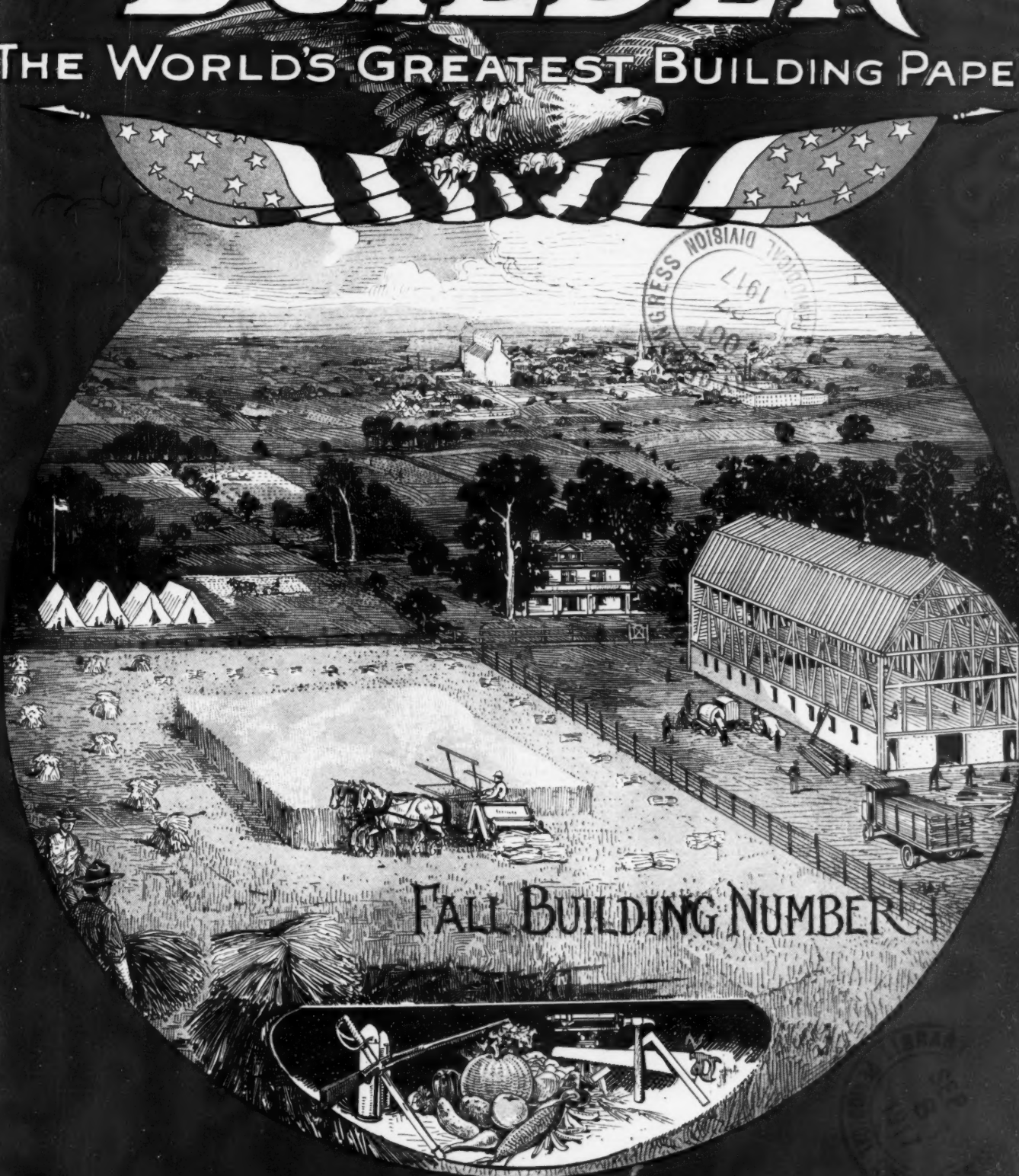


SEPTEMBER,
1917

PRICE 20 CENTS

AMERICAN BUILDER

THE WORLD'S GREATEST BUILDING PAPER



FALL BUILDING NUMBER

Renovation with Stucco Good Business for You

MANY a man will "spruce up the old place" when he won't tear down and build over. Sometimes it is sentiment, sometimes economy.

Renovation can do a lot more than improve the looks of the house. Remodeling and overcoating with stucco make the walls fire resistant—lowering insurance premiums and increasing safety. It makes the home easier to heat in winter, cooler in summer. Lowers cost for repairing or repainting.

The *new color stucco* does wonderful things in color. Toned with exposed aggregates, such as marble and granite screenings, colored sand, gravel, etc., this stucco has a life, character, warmth and individuality not found in ordinary color stucco, and the color lasts.

*Use the coupon below for valuable information
about this new color stucco, remodeling, etc.*

The Atlas Portland Cement Company

Members of the Portland Cement Association

New York, Chicago, Phila., Boston, St. Louis, Minneapolis, Des Moines, Dayton, Savannah

*Home remodeled with Atlas-White, Cairo, Ill.
J. I. Jenkins, Architect*



ATLAS



WHITE

The Atlas Portland Cement Company,
30 Broad Street, New York, or Corn Exchange Bank Building, Chicago

Send me information and specifications on the new color stucco—also "New Homes for Old" and special information on the subjects checked:

☐ New Stucco Homes

☐ Remodeling in Stucco

☐ Stucco Garages

☐ Stucco Bungalows

NAME.....ADDRESS.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Here's A Portable "Planing Mill"

NO matter what kind of work you have for it to do it will do it and do it right. It will save time and labor, too, and utilize all of the lumber—there's no waste where there's an



for odds and ends are turned into profits by its use. Just look over the variety of work it does. It joints, bores, sands, rip-saws, cross-cuts, jig-saws, rabbets, bevels, mitres, tenons and grinds. You can make entire door and window frames with it quicker than you ever made them before—because your "plant" is all in one place. You can take it right out on the "job" with you, too, for it's light and portable. Substantially made—like all Oshkosh products—and moderately priced—it's used by contractors from coast to coast.

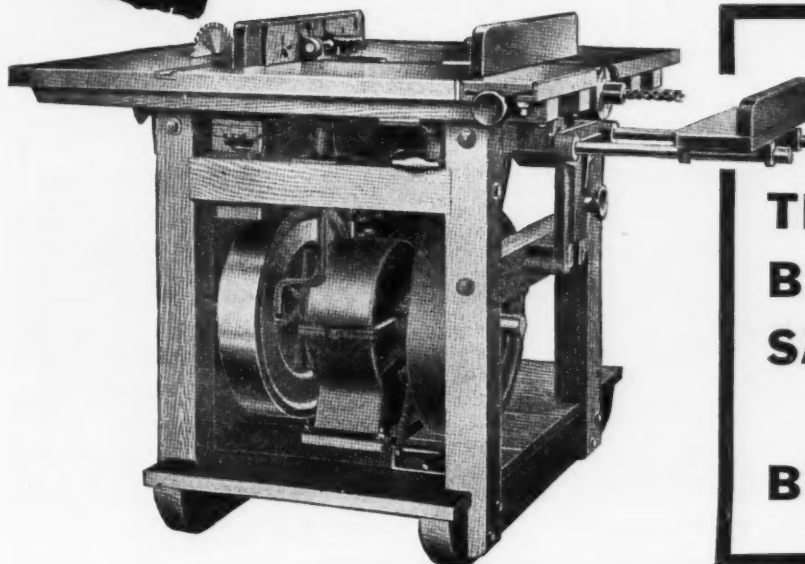
Write today for "Book of Evidence" and price.

Liberty Bonds accepted in payment at full face value

OSHKOSH MFG. COMPANY

93 Amber Street

OSHKOSH, WISCONSIN



**RIP SAWS
CROSS CUTS
TENONS—JOINTS
BORES—GRINDS
SANDS—RABBETS
JIG SAWS
BEVELS—MITRES**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

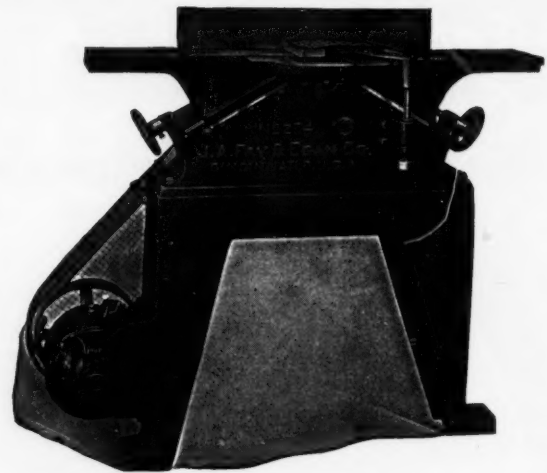


Help Uncle Sam

You can spare some of your men for government work by purchasing a Universal Woodworker. Now, of all times, is the time to increase the efficiency of your working force by employing this high grade woodworker for BAND SAWING, CROSS CUTTING, RIPPING, RE-SAWING, PANEL RAISING, GROOVING, DISC GRINDING, SANDING, JOINTING, BORING, TENONING, DADOING, KNIFE GRINDING and MORTISING.

Keep things humming at home while the boys are at the front. That is **your** duty. Enlist the Universal Woodworker in **your** service. We will give you prices and information promptly on request.

The Crescent Machine Company
224 Main Street Leetonia, Ohio

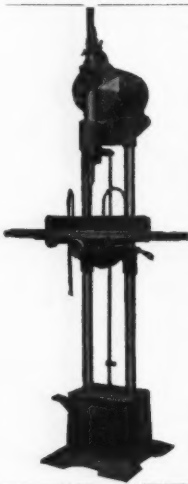


—a really practical Carpenter's Hand Planer

—bench or pedestal—with or without motor

DON'T buy a toy, get a real machine: 6½-inch safety head, thin air hardened steel knives, adjustable bevel fence, removable steel lips, rabbeting arm, pedestal that gives your feet clearance; easy to keep clean under the machine; a practical time-saver and money-maker. Write for Bulletin H-7.

J. A. Fay & Egan Company
545-565 W. Front St., Cincinnati, O.



SUPERIOR HOLLOW CHISEL MORTISER and BORING MACHINE

SPEED and ACCURACY

account for the rapidly growing popularity of the SUPERIOR. This picture shows the Style C.F., also made without motor, with countershaft on base for belt drive. Style C.V. has vertical motor direct-connected to bit shaft.

**WRITE TODAY FOR
FREE TRIAL**

Warren W. Morse, The Low-Priced
1308 West Lake St. Mortiser
Minneapolis, Minn.

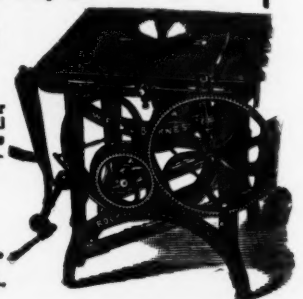
CARPENTERS

In these days of close competition need the best possible equipment, and this they can have in

Barnes' Hand and Foot Power Machinery

Our new foot and hand power Circular Saw No. 4, the strongest, most powerful and in every way the best machine of its kind ever made. For ripping, cross cutting, boring and grooving.

**SEND FOR OUR
NEW CATALOGUE**
W. F. & John Barnes Co.
74 RUBY ST. ROCKFORD, ILL.



Write
for
catalogue
showing
full line of
Wood
Working
Machinery
for
Carpenters
and
Builders.
Also
Bargains
in second
hand
Machinery.



CHICAGO MACHINERY EXCHANGE

1215-1223 WASHINGTON BOULEVARD
CHICAGO, ILLINOIS

From the Raw Steel to the Finished Saw—

Every step in the manufacture is handled by men skilled in their Art. Each process is handled by experts. Every saw is carefully inspected and tested before being forwarded to the next department. When the final test and inspection has been made, Geo. H. Bishop & Co. place their seal of warranty on the saw and you have the Product of the Greatest Saw-Making Organization in the World.

The Greyhound

A saw that will run fast and cut easy. A saw finely adjusted, tough and flexible.

Good Mechanics appreciate good tools. We offer these Saws, confident that they will please you, recommend them to your fellow builders. They are a superior Saw and will serve you long and well.

We refund money if 30-day trial does not prove our guarantee.

Geo. H. Bishop & Co.
Lawrenceburg, Ind.

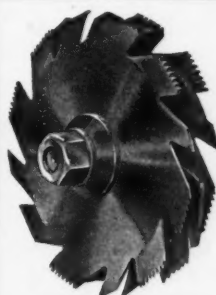


Prices

Made in both Straight and Skew Back, also Ship Carpenters Pattern.

Length, 18 in.	\$2.85
Length, 20 in.	3.00
Length, 22 in.	3.15
Length, 24 in.	3.30
Length, 26 in.	3.50
Length, 28 in.	3.85

Packed one in a box.



Patented Nov. 29, 1892
Feb. 19, 1910.



Showing position of cutters on mandril.

Our No. 34 Catalog sent on request, describes full line of tools for saw rig.

For Your Saw Rig Huther Bros. Dado Head

will cut perfect grooves, any width, with or across grain. It consists of two outside cutters and enough inside cutters to make the desired cut.

The Head comes to you ready to use and guaranteed to do your work satisfactorily.

Ten days' free trial at our expense.

This cutter head can be used on the saw table. Knives are adjusted by headless set screws and are held by dovetailed slides and bolts. Runs like a solid cutter. Any shape knives made to order.

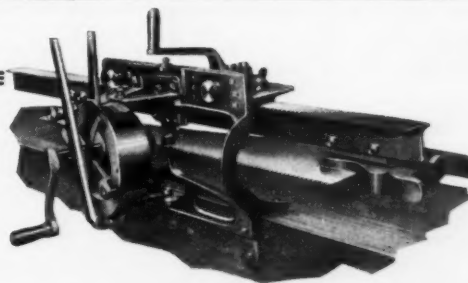


Patented Dec. 30, 1910.



Grooves cut with Huther Dado Head.

HUTHER BROS. SAW MFG. CO.
1101 University Ave. Rochester, N. Y., U. S. A.



THE KEIL HAND SAW FILING MACHINE is receiving a great deal of attention in the building field now. It is because it is producing such good results. It is sharpening hand-saws so they will cut true and smooth. You can appreciate what this means for work like windows, or door-cases, or any kind of fine trimmings in hard or soft wood.

The Keil will file any hand-saw—stiff or limber back—with teeth numbering from 4 to 12 teeth to the inch. It operates in such a manner as to correct all irregularities—all cutting points are set in perfect line, all teeth are made the same length.

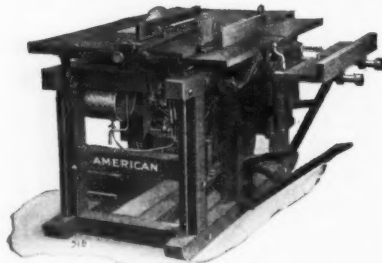
The Keil machine requires no special skill to operate. It is fully guaranteed to do first-class work. Try it out.

Return it, get your money refunded if it is not as represented. Our descriptive circular will tell you all about it. Get the details of our "easy payment" terms, too.

A discount will be allowed to the first carpenter in each town who orders one.

Keil-Dedlow Mfg. Co.
Plainview, Nebr.

"AMERICAN" WOOD-WORKER



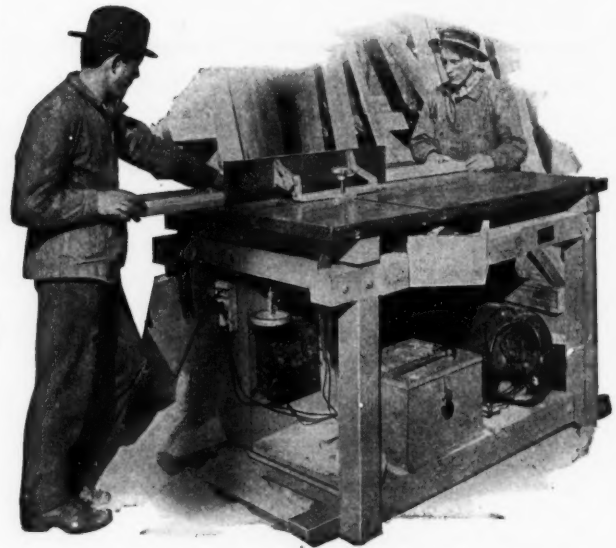
**Simple
Portable
Reliable
Efficient
Profitable**

THE decision you make now, on this woodworker question, will affect all your later operations. Don't be led astray by false ideas of economy. In a woodworker you're not buying a mere machine but productive capacity, earning power. A few dollars' saving in first cost may mean hundreds of dollars lost later in limited output, break-downs, delays, repairs. Decide for the "American" and you'll get a year-after-year woodworker—an outfit that will see you through this season and many seasons, doing high class work all the time. Think of woodworkers in terms of dollars earned instead of dollars spent—and you'll order an "American."

*Read Bulletin 67—
Convince Yourself*

American Saw Mill Machinery Co.
1360 Hudson Terminal, New York City

C. H. & E. PORTABLE SAW RIGS



**Eight Complete Sizes Portable Saw Rigs.
Write for Catalog**

C. H. & E. Manufacturing Co., Inc.
322 Mineral Street Milwaukee, Wis.

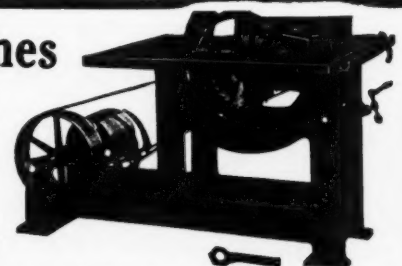
Silver's New Woodworking Machines

are improved right up to present-day requirements. They include SAW TABLES, JOINTERS, SWING SAWS, BAND SAWS, etc. They are constructed so as to make every operation as easy as can be, and save so much time and labor over other methods, that modern Carpenters and Builders are glad to install them and profit thereby.



Silver's Machines are high-pressure machines, built extra strong and rigid to withstand the severest service. They are made in a wide range of sizes and patterns. Jointers 8, 12, 16, 20, 24-in. Band Saws, 20, 26, 32, 36-in. Swing Saws, 6½, 7, 7½, 8-ft. lengths. Saw Tables, two styles.

Note cuts shown and send for our Printed Matter, which gives full details
The Silver Mfg. Co., 345 Broadway, Salem, Ohio



Miller's Lock Mortiser TWO MINUTES

Will cut an opening in a door for a mortise lock
IMPROVED AND UP-TO-DATE
cuts true in any kind of wood for any size lock from 1" to 1½" thick. Easy to operate; durable in construction. Builders use it everywhere.



Sent subject to trial.

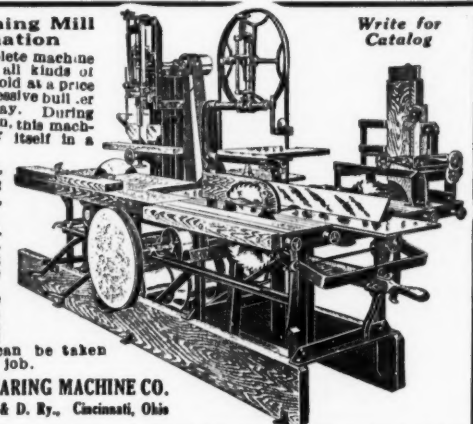
A. W. Miller Mfg. Co.
Riverside, Calif. Cincinnati, Ohio
Our Butt Mortiser and Rule Gauge for 75c, Postpaid

Parks Planing Mill Combination

The most complete machine for getting out all kinds of mill work, and sold at a price which any progressive builder can afford to pay. During the screen season, this machine will pay for itself in a couple weeks.

Rip saw, 12" jointer, 22" band saw, Swing cut off saw, Shaper, Upright mortiser, Tenoner, Sand disk. All ready for instant use without having to make any changes. Machine can be furnished with long bases with engine mounted in rear so it can be taken right out on the job.

PARKS BALL BEARING MACHINE CO.
Fergus St. & C. H. & D. Ry., Cincinnati, Ohio



*Write for
Catalog*



"FAMOUS" Bullets Chase away the DEMON

The "No Profit" Demon is worrying a great many builders. Prices have climbed into the aeroplane. Labor is scarce and expensive. Unfortunately some owners are in a peevish frame of mind. And, take it together, life isn't one long sweet dream for the builder!

But the troubles that beset the builder are no greater than those which bite away at other business men. Times are different. Readjustments are absolutely necessary to meet the trend and make good.

*Automatic machines are taking the places left by men—
speeding up work—cutting operation costs—and making
it possible for builders to make their business pay.*

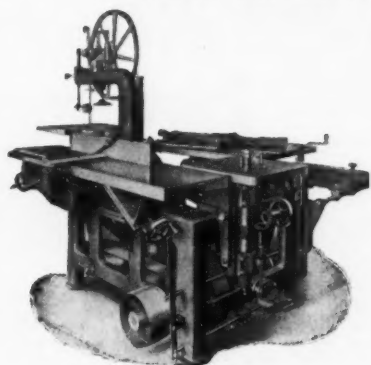
You simply cannot chase away this demon by hand alone. You've got to get after him with POWER MACHINES. Hundreds of builders are using "FAMOUS" Bullets to drive out that hounding old "No Profit" Devil. Why don't you.

WHY DON'T YOU?

Is there a real good reason why? Are you adapting yourself to the times? Have YOU changed your methods to fit changing conditions? Don't you want to make money? WAKE UP! Believe us, there are Opportunities galore RIGHT NOW for the fellow who is prepared for them. But people want better and faster service. They want the man who can take the job at a reasonable price, do a nice piece of work and hustle it through. And FAMOUS machines enable YOU to be that man—and MAKE A PROFIT. Put FAMOUS machines on the job. They'll prove gatling guns that pepper away at the "No Profit" demon and send him hiking. Mail us the coupon or a letter. Write now.

THE SIDNEY TOOL COMPANY

SIDNEY, OHIO



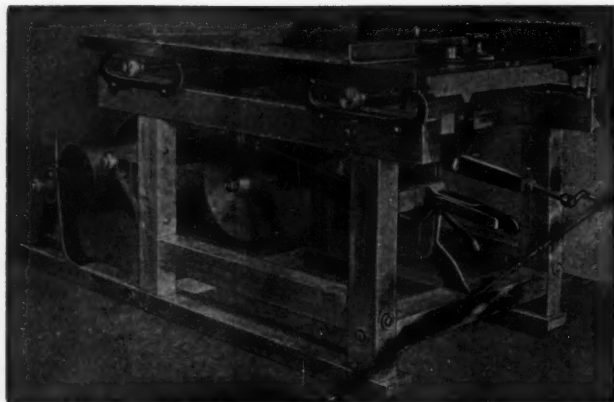
THE SIDNEY TOOL COMPANY
Sidney, Ohio

Gentlemen:

Send me Catalog No. 12, and Bulletins on Woodworking machines. I am interested.

Name.....

Address.....

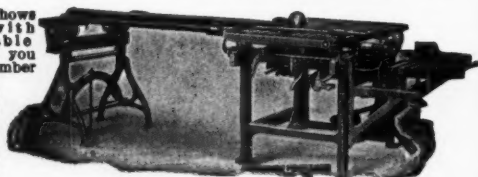


**NOW IS THE TIME TO GET A
BEACH
DOUBLE ARBOR RIP AND CUT-OFF MACHINE**

Get this money-maker on the job. This portable wood-worker will handle all your fine sawing, as well as your dimension stuff. Either gasoline engine or electric motor drive. Has our patented rolling table, making it the most efficient machine on the market. Don't delay—make this year the most profitable and successful of your career. Write for descriptive catalogue.

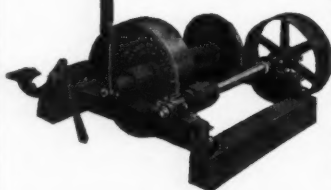
BEACH MFG. CO., Montrose, Pa.

This view shows extension with rolling table. This allows you to handle lumber up to 20 ft. and slides easily with 1000 lbs. weight in it. Looks instantly for ripping or beveling.



"Reliable Erie" Hoists

Attention Contractors & Builders



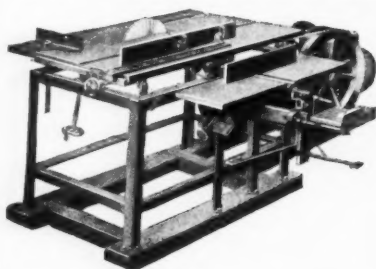
Labor is getting scarcer and more expensive every day. It will be to your advantage to get

A RELIABLE ERIE HOIST to do your heavy lifting. Not an expense but a good investment.

Write for booklet

The Erie Hoist Company
26th & Holland St., Erie, Penna.

Allow the **"HERCULES"** To Cut Costs



THE Hercules has patented advantages which no other machines possess—Its construction insures the most rigid frame of any woodworker on the market.

Write us for
Bulletin "A"

HERCULES MACHINE COMPANY
50 Church Street New York, N. Y.

QUICK ACTING *The Taylor* SELF LOCKING

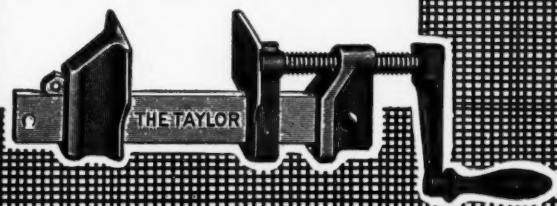
Clamps

An Investment
Not an Expense

The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

We can *PROVE* it in your own shop. Write today.

James L. Taylor Mfg. Co.
Poughkeepsie, N. Y.



PLANING by ELECTRICITY
ENDS HARD LABOR

Use the **WALLACE BENCH PLANER**

MOTOR or BELT DRIVEN

Send for Folder



This is the greatest little device known to all mechanics as a time and labor-saving machine. By simply connecting with any electric light socket you can start it working in a second. Heavy cuts can be made in both hard and soft wood—and no sanding is necessary. It is equipped with safety guards and all modern devices.

J. D. WALLACE & CO.

4-inch Knives Weight 50 lbs. Portable
1405 W. Jackson Blvd. CHICAGO, ILL.

A Mitre Box Bargain

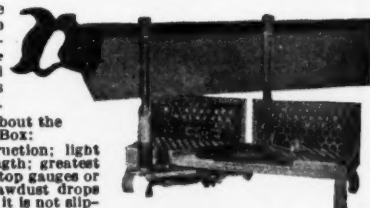
IN order to extend the sale of Honey-comb Mitre Boxes we are offering a box at wholesale price to carpenters and builders in communities where we have no dealers.

Consider these points about the Honey-comb Mitre Box:

Unexcelled design in construction; light weight without loss of strength; greatest range of places for moving stop gauges or duplicate length gauges; sawdust drops through box out of the way; it is not slippery and will not mar the finest work; saw is elevated in such a way as to be free from bearings of guides; the highest grade materials and workmanship used throughout.

Let us send you further information on the Honey-comb. Get our prices and Circular "A"

Rockford Mitre Box Co., 99 Forbes St., Rockford, Ill.



Snap this up! Get this high-grade mitre box at an extremely reasonable figure

A SENSIBLE CONTAINER FOR TRACING CLOTH POWDER



The felt disc on cover saves time. No cloth or tuft of cotton needed.

TO prepare tracing cloth so it will take ink readily, the perforated cover of the container is turned slightly to the left, thus permitting the powder to be shaken on the cloth.

But little powder is required, it being rubbed evenly over the surface with, and thoroughly removed by, the felt disc which is securely fastened to the top of the cover.

The felt disc is part of the container—always ready for use. Saves time, as it is not necessary to hunt for a cloth or tuft of cotton.

15c plus postage is price for can filled with powder. Weight 10 oz.

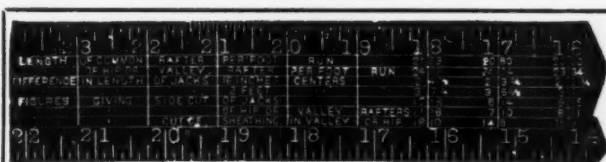
EUGENE DIETZGEN CO.

Manufacturers

Chicago
New Orleans

New York
Pittsburgh

San Francisco
Philadelphia



NICHOLLS FRAMING SQUARES

Gives all lengths and cuts of all rafters for sixteen pitches of roof

The ORIGINAL and MOST COMPLETE

square on the market today

Send For Our Little Book Explaining This Rule

NICHOLLS MFG. CO., Ottumwa, Iowa

A POPULAR PRICED STEEL TAPE

LUFKIN "BANNER"

Accurate, standard size steel line 25 to 100 ft., put up in metal lined auto leather case. A tool you need at a price you can afford. Ask your hardware man.

Measuring Tapes, Boxwood and Spring Joint Rules
Send for Catalog

THE LUFKIN RULE CO.

Saginaw, Mich.

106 La Fayette St.
New York



Tools You Use Constantly

Tools you use every day and all day you buy with the most care. When laying out work, you haven't time to ask yourself if your tools are accurate. You must take accuracy for granted—and you can if you use

Starrett

TRADE MARK
REG. U.S. PAT. OFF.

Tools

Master builders select their squares, scratch gages, combination squares, scrapers, levels, dividers, trammels and other tools by the name "Starrett."

Catalog No. 216 will help you do the same. Ask us to send it today.

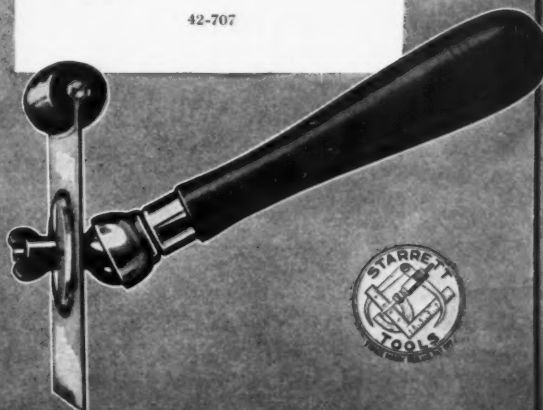
The L. S. Starrett Co.

The World's Greatest
Tool Makers



Athol,
Mass.

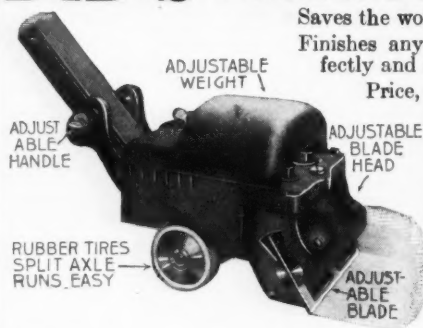
42-707



DID'S MONEY-BACK-IF-YOU-WANT-IT FLOOR FINISHER

Saves the work of three men.
Finishes any wood floor perfectly and quickly.

Price, only \$24.50, cash with order.



Money back any time it fails to satisfy you.

H. P. DIDRIKSEN
COLUMBUS, OHIO
1826 Summit Street

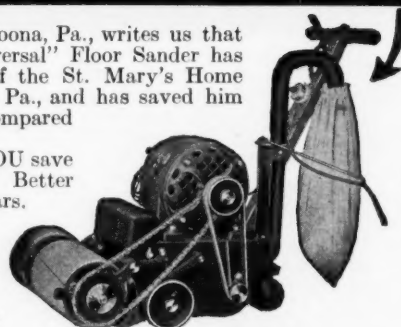
Saved \$400.00 on One Job of Floor Surfacing

J. C. Ivory of Altoona, Pa., writes us that the "American Universal" Floor Sander has finished the floors of the St. Mary's Home for Girls at Cresson, Pa., and has saved him over \$400.00 as compared with hand scraping.

How much will YOU save on your next job? Better write us for particulars.

American Floor Surfacing Machine Co.
515 So. St. Clair St.
Toledo, Ohio

"The Oldest Concern in the Business"



The IMPROVED Rapid Floor Surfacers

will surface right up to the wall or baseboard without the use of Edge Roller. Just the machine you would want for surfacing all kinds of wood floors, whether old or new. Will smooth down rapidly and easily all joints or warped edges. Perfect results guaranteed. More than 20,000 of our machines now in use. Guaranteed against defect in material and workmanship for five years.

Send for our Free Trial Offer. It will interest you.

M. L. Schlueter

225-27 W. Illinois St., Chicago, Ill.



Made in several sizes



Floor Scraper Blades

Cut faster, hold their edge longer than any other scraper blade in the world—money back guarantee.

Fox Supply Co.
Dept. A Brooklyn, Wis.

We make blades for any make of scraper



FREE to YOU—For 10 Days The Triple "A" Spring Driven Floorsmoothen



To enable you to try our machine out, and learn for yourself its many superior qualities, we will send you one of our BRAND NEW Triple "A" SPRING DRIVEN Floorsmoother for 10 days' free trial, freight prepaid. The Triple "A" is the only floor scraper on the market equipped with a SPRING MOTOR DRIVE—the only convenient motive power. Requires neither fuel nor current—always on tap when wanted. It lessens the work fully two-thirds. Only one motion required—the push forward. This winds the SPRING MOTOR which automatically stops the machine and sends it back on the cutting stroke.

Will save its cost on one job. Write today for full particulars regarding our special trial offer.

Triple "A" Machine Co., Room 100, 4125 Ravenswood Ave., Chicago, Ill.

Stop Making "Borderwork"

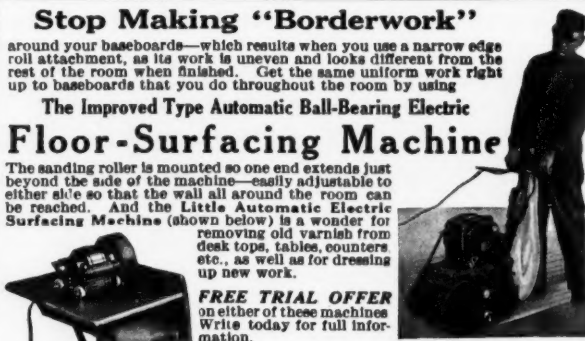
around your baseboards—which results when you use a narrow edge roll attachment, as its work is uneven and looks different from the rest of the room when finished. Get the same uniform work right up to baseboards that you do throughout the room by using

The Improved Type Automatic Ball-Bearing Electric Floor-Surfacing Machine

The sanding roller is mounted so one end extends just beyond the side of the machine—easily adjustable to either side so that the wall all around the room can be reached. And the Little Automatic Electric Surfacing Machine (shown below) is a wonder for removing old varnish from desk tops, tables, counters, etc., as well as for dressing up new work.

FREE TRIAL OFFER
on either of these machines
Write today for full information.

Wayvell Chappell & Company
356-358 W. Madison Street Dept. D Chicago, Illinois
Phone Franklin 4160



100 Lafayette St.,
NEW YORK

THE JAMES SWAN COMPANY, Seymour, Conn



Manufacturers of all kinds of BITS, CHISELS, DRAW KNIVES, GOUGES, GIMLETS, AUGERS, NAIL SETS, SCREW DRIVERS, COUNTER-SINKS, BORING MACHINES and EXPANSIVE BITS.

Buy only Carpenters' Tools bearing the Trade Mark which stands for Quality.

Awarded Medal of Honor on Mechanics' Tools at Panama-Pacific Exposition.





Showing
Sun-Shade
Attachment

Try This Aloe Level 10 DAYS—FREE

Easy Monthly Payments If You Buy

Prove the superior quality of the Aloe Convertible Level by testing it out for 10 days. Use it on your every day work laying out buildings, locating foundation piers, leveling up foundations, walls and floors, aligning, shafting walls, piers, etc., for getting angles, or levels anywhere and the hundred and one other things for which you would use a level or transit. Then, if you decide to keep it, you may pay for it in easy monthly payments so small that you will scarcely feel them.

Aloe Convertible Level

is more than a mere level. It is a modified transit permitting double the range of work possible with an ordinary architect's level. Its construction is such that sights above or below the horizontal can be taken, making it the finest instrument ever offered at anywhere near the price. For taking vertical sights the instrument is provided with a special convertible bracket rigidly and permanently attached to the cross-bar thus eliminating the extra time that other instruments require for changing the telescope in position to take vertical readings. The telescope which is fitted with a permanent axis, rests in the bracket bearings and owing to our special constructed clips the instrument can be used for leveling while in this position if desired, although the bracket clips are easily and quickly released from the telescope axis when levels only are to be taken. The telescope is then set in its normal position in the wyes and you have overcome the old method of attaching and detaching the convertible bracket.

Your Own Time To Pay—No Interest

Remember, you are under no obligation whatever to keep the Aloe Convertible Level. We do not even ask you to promise to buy. But you owe it to yourself to see and try it. If it isn't all you expect you may return it at our expense. If you do keep it, you will find the small monthly payments easier than paying rent for an instrument—and at the end of a few months you will own it—absolutely. There's no red tape about this offer—we ask no embarrassing questions—everything is confidential—we charge no interest. You have practically your own time to pay.

Mail Coupon for Descriptive Circular

It explains the Aloe Convertible Level in detail and shows how easily the man without the training of the engineer or surveyor may secure the same accurate results as the expert. Send your name on coupon or postal for free copy and full particulars of our original, unique and popular selling plan.

A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

Mail Coupon NOW

**A. S. ALOE COMPANY,
621 Olive St., St. Louis, Mo.**

Please send free descriptive circular about the Aloe Convertible Level and complete details of your easy payment plan. This request in no way obligates me.

Name.....

Occupation.....

City..... State.....

By means of the patented axis (our own exclusive feature) this level can be instantly converted into a transit. No screws to adjust; accurate, reliable, durable; moderate in price.

**New York
Blue Print Paper Co.
102 Reade St., New York**

**From Level to Transit
in a Few Seconds**

For
Builders,
Contractors
and
Architects

Write for
Catalog of Con-
vertible Levels,
Drawing Ma-
terials, etc.

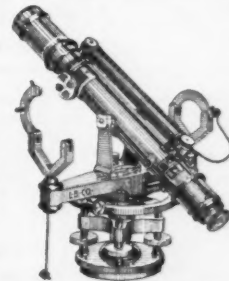
The Level For You

when locating lines and levels for streets, buildings, drains, walls or any leveling work where the stations are not more than 300 feet apart—is our No. 401 Architects' Level (illustrated).

Only \$50.00

for this instrument magnifying 22 diameters, exceptionally fine lens system, horizontal circle reading to five minutes—dust guard, sun shade, dust cap and improved spiral motion for focusing. Write for detailed description.

The L. Beckmann Company
500 Adams Street Toledo, Oh o



As This Level

was made to meet your especial requirement, it should be worth investigating

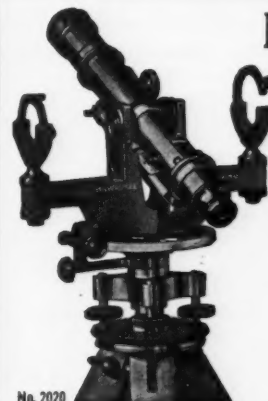
**"KOLESCH"
Builders' Level**

Light in weight, built for hard usage and reasonable in price

The purchase of a "Kolesch" Transit or Level isn't an expense—it's an investment that pays big



Send for full particulars TODAY
KOLESCH & COMPANY
138 Fulton Street New York



Buy a "White" and Level Satisfaction

The "White" Convertible Level is so accurate, so dependable, so durable, that you can't buy one without getting a full measure of satisfaction along with it as hundreds of contractors will testify. Accuracy and durability are built right into this improved convertible level. Let us send you one for free ten days' trial. Circular describes the new level and quotes prices—ask for it.

DAVID WHITE CO., Inc.
419 E. Water St., Milwaukee, Wis.

No. 2020



FOR TEN CENTS—get this little nail set. Made of the best steel—carefully tempered, accurately cupped and tested on steel. NO-ROL is another kind—square shaped to prevent its rolling. A NO-ROL set costs 12 cents. We will mail either of these, postpaid, if dealer cannot supply you.

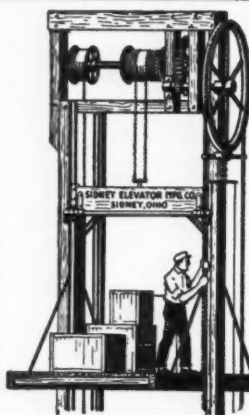
SYRACUSE TWIST DRILL COMPANY,

Syracuse, N. Y.

WHAT ARE YOU DOING TO MAKE YOUR PRODUCT KNOWN?

Forty thousand building contractors, dealers in building materials, architects and carpenters are reading these advertising pages every month. Make your products better known to these buyers by continuous, persistent, memory-refreshing advertising.

KEEP YOUR FLAG FLYING!



SIDNEY ELEVATORS

Will reduce your handling expense, and speed up your work.

Our machines are easily installed from our complete plans and instructions which are sent with each elevator.

The Reasonable Cost Will Interest You

Write us today, stating requirements, giving style of machine wanted, size of platform and number of feet travel, and we will quote a money saving price on equipment to serve you well.

SIDNEY ELEVATOR MFG. WORKS
SIDNEY, OHIO

1853



1917

Fine Beveled Edge
Shank and Socket

Chisels



Tang and Socket Butt Chisels

Plain and Beveled Edges

Send for illustrated Catalog

Buck Bros., Millbury, Mass.

UNI-ELECTRIC Light and Power for the farm and summer home. Delivers standard 110 volt current. Uses no belts—no batteries. Makes a profitable side line for carpenters and can also be used to furnish light for night work on rush jobs.

WATERMAN MOTOR COMPANY
152 MT. ELLIOT AVE., DETROIT, MICH.



CARPENTERS WANTED AS AGENTS

Now is the time to act. Big Money. Ready Seller

Sanitary Automatic Dumbwaiter saves carrying food to and from cellar. Perfectly ventilated; screened openings; finished inside with durable white enamel. Keeps food perfectly. Top lies flush with kitchen floor. You can walk over it. Operates with push button or lever. Also furnished as a Refrigerated dumbwaiter. Assembled complete ready to install. But three hours required to place our waiters in actual operation: old or new homes. Quotations include every needed supply. \$17.46 apiece. Illustrated catalogue.

York Automatic Dumbwaiter Works 639-645 West Market Street, York, Pa.

DUMBWAITER COMPLETE \$19.50 READY TO INSTALL

Includes all necessary material, not knocked down—machine, machine timbers, bolts, boxes, car, counterweight, ropes, guide ways, etc., all ready to set in hatchway and erection instructions. Length up to 20 feet. All material guaranteed. Money back if not satisfactory. Write for further particulars.

Highwood Dumbwaiter Co., Grand Ave., Leonia, N. J.

NO FALLING WINDOWS
SMASHING GLASS
POCKET FRAMES
SASH WEIGHTS
RATTLING
BINDING
CORDS with
**AUTOMATIC
SASH HOLDERS**

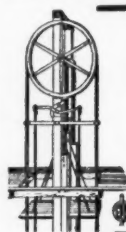


**SPECIFY
USE
DEMAND**

Automatic Sash Holders

and save labor, lumber and money. Send for trial set (\$1 prepaid) stating approximate weight of sash, or our circular.

Hardware Sales Co., Inc.,
52 Church St., New York.



KIMBALL ELEVATORS PASSENGER AND FREIGHT

We manufacture an improved line of Electric, Hand or Belt Power Elevators, Dumbwaiters, Hatch Gates, etc. Send for full information.

Address

KIMBALL BROS. CO., 1050 9th Street
Council Bluffs, Iowa



HOISTS & ELEVATORS

Columbia Dumb-Waiters
Pavement or Cellar Hoists
Jumper Disappearing Dumb-Waiters
Chain Blocks, Cranes and Trolleys

Send for Catalog

J. G. SPEIDEL Reading, Pa.



Sedgwick Hand-Power Dumbwaiters and Elevators

Manufactured by Specialists and guaranteed. Send for Catalog and information.

SEDGWICK MACHINE WORKS 132 LIBERTY ST.
NEW YORK

**You Can
Move a
Building
a Mile a
Day With**

**ALL-STEEL GIANT
HOUSE-MOVING TRUCKS**

NO lost time fooling with loose rollers, tracking and leveling up. The Steel Giant oscillator header takes the humps out of the road. House rides on an even keel without rack and speeds along smoothly. Big money can be made in every community with All-Steel Giant House-Moving Trucks. Send for catalog "B" and free trial and introductory offer now.

FREE--"Successful House-Moving Contractor," Special magazine for house-movers. Send for it. E. W. La Plant, Pres. La Plant-Chaste Mfg. Co. 620 Eastlack Court Cedar Rapids, Iowa

Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning.

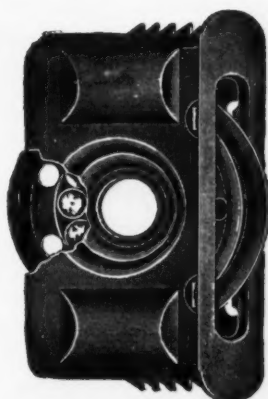
His confidence in your judgment will make it easy for you to secure this additional work.

The Barnett System of Guaranteed Lightning Protection is the easy way to more profits on the same job. Our rods are in big demand and there is a big profit in selling them. They are made of pure copper cable, with attractive fixtures that are easily put on any building.

Why not equip yourself to take advantage of the opportunities for this work which are continuously arising? Let us show you the way to more profits on the same job.

FREE--Cable Samples, Price List and Catalog. Write for them today.

JOS. L. A. BARNETT & CO.
CEDAR RAPIDS, IOWA



No. 10 Ball Bearing

"Grand Rapids"

**Ball Bearing
ALL STEEL
Sash Pulleys**

**Fasten Automatically
No Nails—No Screws
Just Bore Four Holes**

The automatic saw tooth fastening feature and the simple and easily made mortise will save in labor enough to pay for the pulleys.

The bearing contains eleven $\frac{1}{4}$ -inch Solid Steel Balls running in lubricant, insuring a noiseless, easy running wheel under any load.

NOISELESS—EVERLASTING
Write for **FREE** Samples

Fifty Different Styles

Grand Rapids Hardware Co.
Manufacturers

158 Eleventh Street - Grand Rapids, Mich.

Ankyra Ankor Bolts

**Self-
riveting
Self-
adjusting**



**There You Have It
in a Nutshell**

IT MAKES no difference what kind of wall, hollow or solid, thick or thin, Ankyra Ankor Bolts will hold fixtures or grounds rivet-tight until you want to change them.

Then, a screw driver and a twist of the wrist—that is all, except that the new fixture will be as tight as the old one.

One more point is, that you can match the rest of the hardware when you use ANKYRAS.

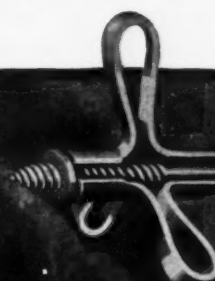
Use ANKYKA ANKOR BOLTS—it pays—one satisfied customer brings another.

There are many more advantages and many more uses for ANKYRAS. Write for the rest of the story—we'll send you sample bolts with it, free.

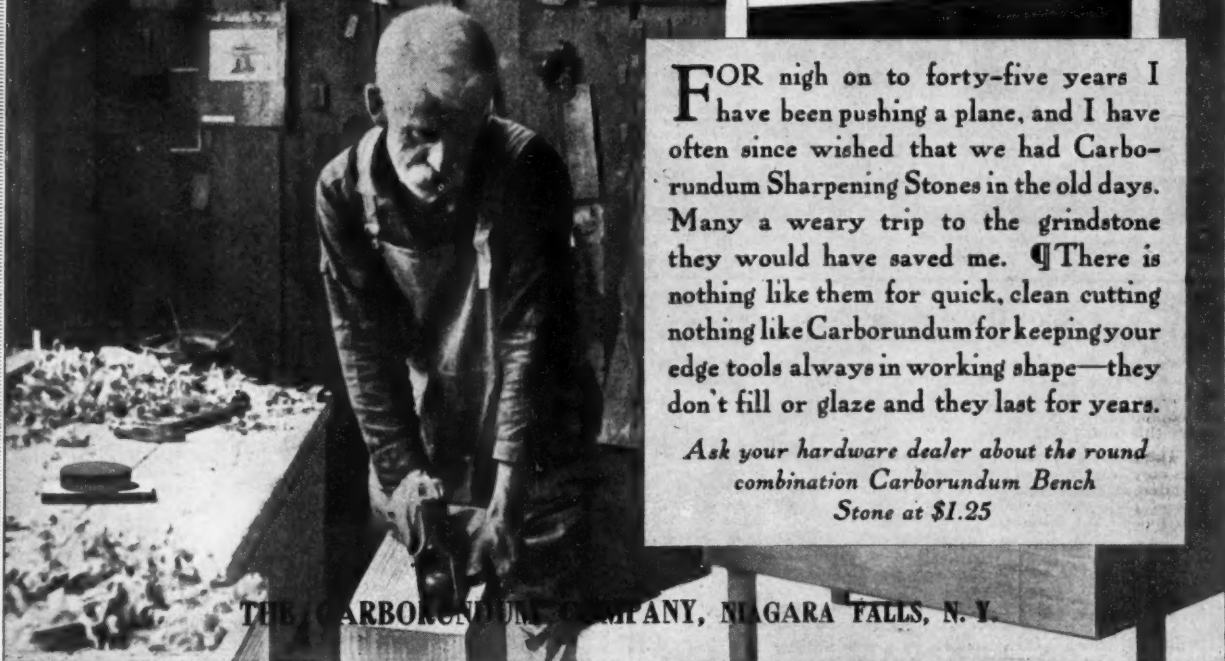


Anchor Bolts

**Ankyra
Manufacturing Co.**
151 Berkley Street
Wayne Junction, Philadelphia



From the Grindstone Days to the Age of Carborundum



FOR nigh on to forty-five years I have been pushing a plane, and I have often since wished that we had Carborundum Sharpening Stones in the old days. Many a weary trip to the grindstone they would have saved me. ¶ There is nothing like them for quick, clean cutting nothing like Carborundum for keeping your edge tools always in working shape—they don't fill or glaze and they last for years.

Ask your hardware dealer about the round combination Carborundum Bench Stone at \$1.25

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

LEBANON

A Different Bit---A Bit Different



Lebanon Bits are designed in a different way. With the famous "Z" twist and keen-cutting edges Lebanon Bits sever the wood like a sharp chisel and bring out the chips without heating.

Lebanon Bits bore from 40 to 60 per cent further with the same number of turns than any other bit on the market, and leave clean, chipless holes behind them.

Write for the latest Lebanon catalog which gives full information regarding Lebanon Bits.

The Lebanon Machine Company
Lebanon, N. H.

E. Z. Boyd Co.
126 Chambers St.
New York



E. B. Standart
59 W. Lake St.
Chicago

89-26

"YANKEE"

Ratchet Driver No. 10

**Saves Time
at Every Turn**

Here you have—an easy working ratchet, right hand, left hand (and rigid), a comfortable handle and withal a strong and serviceable driver.



Made in
8 lengths of
blade, from 2
inch for small
screws, up to 12
inch suitable for all
kinds of high power
house carpentering.

Your Dealer Can Supply

Let us send you a
"YANKEE" Tool Book.

North Bros. Mfg. Co.
Dept. A, Philadelphia, Pa.

Self-setting



THIS is the only self-setting plane on the market. The Gage Self-setting Plane is self-setting because the cutter iron goes back in the plane in the same position it was before being removed. It is a great time and labor saver. So easy and simple to operate. It is so easily adjusted. It can be changed from double to single iron or vice versa in two seconds. It will do to a nicety the coarsest or finest work and will smooth cross-grained knotty or curly wood against the grain, working perfectly on both hard or soft wood.

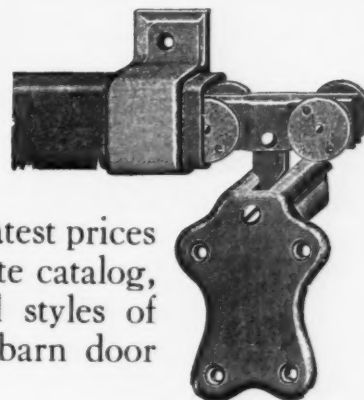
If you haven't happened to have used or seen a Gage Self-setting Plane you will be surprised at its wonderful efficiency. It is recommended by carpenters, Manual Training Schools, and hundreds of woodworkers who tell of the satisfaction they derive from the use of a Gage Self-setting Plane.

If your Tool Dealer does not have them in stock for your inspection, send us his name and we will send you price list and circulars.

GAGE TOOL CO., Inc.
VINELAND, N. J., U. S. A.

Lane's Superior Quality Ball Bearing Trolley Barn Door Hangers

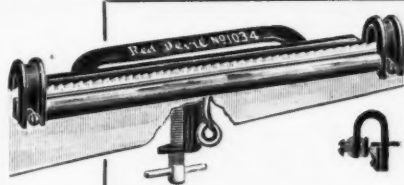
Are rapidly displacing those of inferior quality.



Send for latest prices and complete catalog, showing all styles of house and barn door hangers.

Lane Bros. Company

Cherry Street, Poughkeepsie, N. Y.



"Red Devil" Carpenter's Adjustable Saw Vise

Saves Your Saw — Pays for Itself

Solid steel—noiseless rubber jaw—eccentric lock. Instantly clamped anywhere or folded into tool kit. Files hand or rip saws. Sample \$1.10, Style No. 1034. Tool literature free.

SMITH & HEMENWAY CO., Inc.

106 Coit St., Irvington, N. J.



"A Bit of Utility"

FORSTNER BITS are DIFFERENT from all other wood boring tools. Being guided by the outer rim they may be turned in any direction. The work is left smooth and polished.

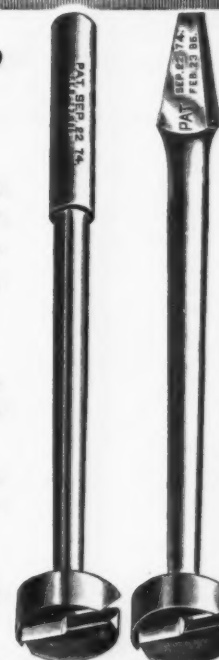
Unequaled for Delicate Work

Practical for use as gouges or chisels, suitable for scalloping, fancy scrolls, twists, columns, newels, ribbon mouldings, mortising, etc.

Cabinet and pattern workers are enthusiastic over them. They do more work and cost no more than other bits.

We can offer something **SPECIAL** in the way of **PRICE**. Write for catalog and particulars.

The Progressive Mfg. Co.
Torrington, Conn.



Built
to
Last

Sterling

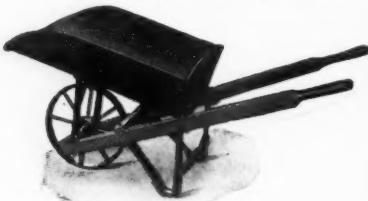
Easy
to
Wheel

"THE CONTRACTOR'S WHEELBARROW"



No. 15

For Sand, Stone or Concrete.



No. 2

For Dry Materials.

The Sterling Wheelbarrow is designed specially for Contractors Work, and is the embodiment of ideas solicited from the Contractors.

The Sterling Barrow has always led the procession with advanced ideas and improvements, simply because it has always been our policy to produce *the best* instead of *the cheapest*.

The trays are designed to hold large loads and are properly balanced over the wheel. The wheels are equipped with self-lubricating bearings which lessens the effort of wheeling. The leg Braces are *riveted* (not bolted) which method insures long life and rigidity.



No. 32

For Concrete or Mortar.



No. 16

For Concrete or Mortar.

A Wheelbarrow For Every Contractors Purpose Shown In Catalogue 19-Write for It.
STERLING WHEELBARROW COMPANY.
MILWAUKEE WISCONSIN.



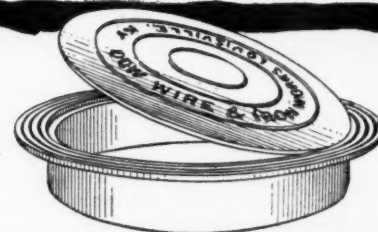
Pays for itself on the First Job

The Pearson Automatic Shingle Nailer

Do your nailing fast—faster than ever before. You can use this Pearson's Nailer on any pitch roof. Wear mittens, gloves, etc. This "Hand Nailer" is the only Nailer—throw nails in by the handful—then start nailing. Nails easily driven through tin or quite heavy sheet iron. These nails are made in two sizes—The BLUE Nailer for 3d, common No. 14 gauge wire nails.

The RED Nailer for 3d galvanized No. 13 gauge 1 1/2-in. wire nails. The regular price is \$7.00 but if you order from this ad. we will send it pre-paid parcel post for \$5.00. This offer is liable to be withdrawn, so act now.

PEARSON MFG. CO. - ROBBINSDALE, MINN.

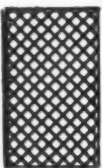


**Write Us for Estimates
on Builders' Iron Work**

Window Guards, Elevator Enclosures, Elevator Cabs, Hangers, Ornamental Iron, etc.

DOW WIRE & IRON WORKS, Inc., LOUISVILLE, KY.

Wire Window Guards



Counter Railings
Elevator Enclosures
Tubular Hand Rails
Brass and Bronze Work

DON'T FAIL
to get our catalog and full information for your own benefit!

The Cincinnati Mfg. Co., Cincinnati, Ohio

ADZE

Why should you use
White Adze?

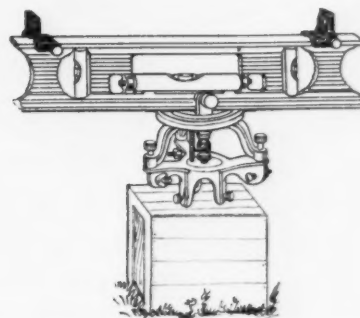
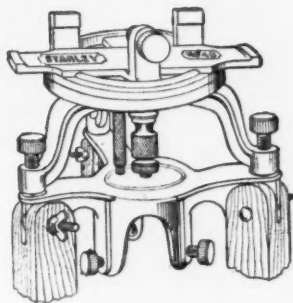
You can do just about a half more work and do it easier. They stay sharp longer and don't break. Pretty good reason, isn't it?

Ask your dealer for White Adze. Send for our adze folder. It gives you all our prices. Do it today.



THE L. & I. J. WHITE CO., 10 Columbia St., Buffalo, N. Y.

Stanley Tools



STANLEY Improved LEVELING STANDS

A Stanley Leveling Stand, used in connection with a wood or iron level and a pair of level sights, will be found in many cases a very satisfactory and inexpensive substitute for the more expensive surveyors' instruments. ¶ By its use one can readily determine levels from a given point to one at a distance, such as locating or setting the profiles for foundation work, ascertaining the proper grades for drains, ditches, etc. ¶ It can be placed on a stake or crow-bar and adjusted to a horizontal position, even though the stake or crow-bar may not be exactly perpendicular. ¶ As now made it can readily be attached to a tripod. A thoroughly practical tool. Price of stand with a 12-inch metal level and a pair of Level Sights \$4.50. Price of Stand only—adapted for either wood or metal Level—\$2.00 Send for special circular.

STANLEY RULE & LEVEL CO.
NEW BRITAIN, CONN. U.S.A.

It's There WHEN You Want It—



This cut shows Stairway half way up to ceiling. Spring barrels and counter balance do the work. You merely direct it.

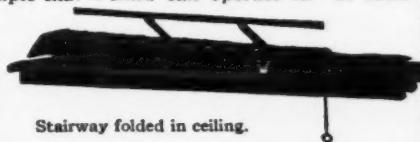
The Bessler Movable Stairway is the only stairs that

can be folded up into the ceiling, leaving the lower

floor entirely clear. It is designed to do away with the stationary, space-devouring stairway to attics and lofts, as well as to half stories in bungalows. When needed a light tug on a chain brings it down when stairs are easily rolled down the panel on to the floor. When not in use it is swung up into the ceiling out of the way.

IT IS THERE WHEN YOU WANT IT
OUT OF THE WAY WHEN NOT IN USE

So easy and simple that a child can operate it. It costs less than a stationary stairway—bear that in mind. And just think of the space it saves in the valuable lower rooms. Architects, contractors and home builders are invited to get in touch with



Stairway folded in ceiling.

The Bessler Movable Stairway Co.
AKRON, OHIO



Make it easy for the women

"Mother and the girls" in most every automobile-owning family drive the car nowadays—at all times of day and in the evening, to do errands, shop, meet trains or for pleasure purposes.

Make it easy for the women folks to open and shut up the garage by putting in doors equipped with Topping Hangers.

Women like them

Topping Doors open and shut easily—noiselessly—they roll smoothly on the track—automatically lock when open—or closed—they fold back compactly against the garage when open and do not take up needed space inside. The Topping Garage Door Hanger is extremely simple in design—cannot get out of order. It is well made and good for many years of hard service.

Send for Our Catalog for Full Details

Safety Door Hanger Co.

309 Topping Bldg.

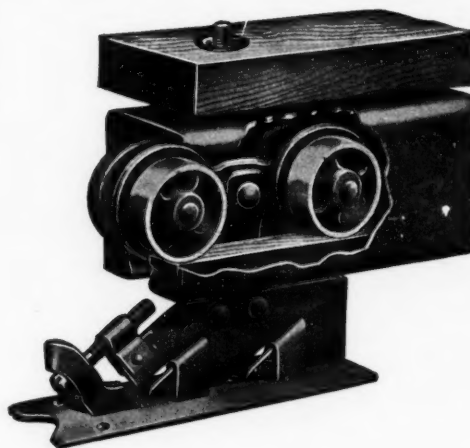
Ashland, Ohio

Richards-Wilcox House Door Hangers

Slide easily, silently—like a sled

Enable occupants of home to separate rooms when desired or to throw open the entire house as one unit.

Save space. Save heat. Adjustments of both hanger and track provide for settling and shrinking of doors and building walls.



Sold by the best hardware trade everywhere

WRITE FOR FOLDER

Richards-Wilcox Manufacturing Co.

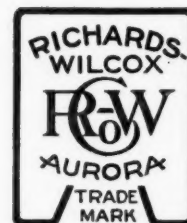
SAN FRANCISCO
LOS ANGELES
NEW YORK
CHICAGO

AURORA, ILLINOIS, U.S.A.

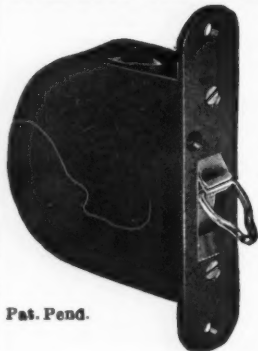
Richards-Wilcox Canadian Co., Ltd., London, Ont.

"A hanger for any door that slides"

PHILADELPHIA
MINNEAPOLIS
BOSTON
ST. LOUIS



Caldwell Sash Balances Uniform Mortises



Pat. Pend.

For use in all classes of new work. Box frames unnecessary. Mortises cut at mill reduces cost of installing. Counterbalance sashes perfectly unaffected by atmospheric conditions. Cheapest method for modernizing old window, as alterations in sashes and frames are not necessary. Sashes should be weighed before ordering.

Write for Circular
CALDWELL MFG. CO.
2 Jones St. Rochester, N. Y.

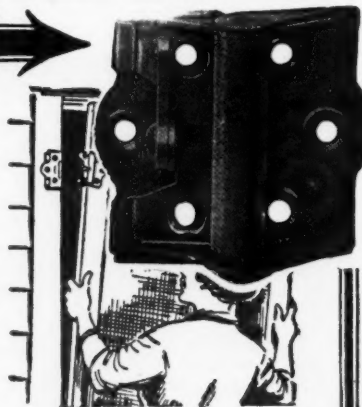
JEFFY!

Just the hinge your clients have been looking for. Once installed, the Jeffy Hinge enables the housewife to put up or take down the screen doors or windows without the use of screws or tools of any kind.

Ask Your Dealer to Show You a JEFFY HINGE

They are inexpensive, made in a variety of finishes and assure to make a neat satisfactory job. If your dealer cannot supply you, write for samples and prices.

ROCK CITY MFG. CO.
Wabash, Ind.



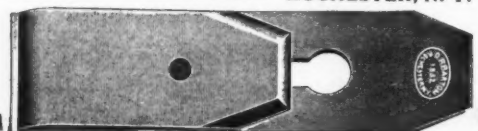
BARTON TOOLS

The steel capped double plane iron illustrated is one of the celebrated Barton Tools.

For many years these tools have been known for their unequalled, keen, hard, smooth-cutting edges.

Barton Tools last a lifetime and give satisfaction to the end. Ask your dealer to show you our tools or send direct for catalogs and free story book—True Stories. Specify "Carpenter's Catalog."

MACK & COMPANY 100 BROWNS RACE
ROCHESTER, N. Y.



Say Shelby "CHIEF"

When You Talk About FLOOR HINGES

*"The hinge without woes,
As the wise carpenter knows."*



Manufactured by
The Shelby Spring Hinge Co., Shelby, O.
Sold Everywhere

ECONOMY

DURABILITY

Pullman Unit Sash Balance

Cost Less Than Cords, Pulleys and Weights

Made entirely of pressed steel, smooth running, unbreakable and practically noiseless.

A carpenter can install twice as many windows with Pullman Unit Sash Balances per day as can be fitted with cords and weights—a saving in labor of 100 per cent. Over six million in use. Recommended by hundreds of Architects. Approved by Fire Underwriters Laboratories.

You can save money by learning more about Pullman Unit Sash Balances. Write today for illustrated Catalog with blue prints.

PULLMAN MFG. COMPANY
10 Industrial St. Rochester, N. Y.

Pullmanize Your Windows




C. G. HUSSEY & CO.
Pittsburgh, Penna.

MANUFACTURERS OF **COPPER**

In Sheets, Plates, Rolls

CORRUGATED COPPER CONDUCTOR PIPE



Copper Nails, Copper Rivets, Conductor Pipe, Eaves Troughs, Elbows, Shoes, Mitres, Soldering Coppers, Gaskets, Etc.

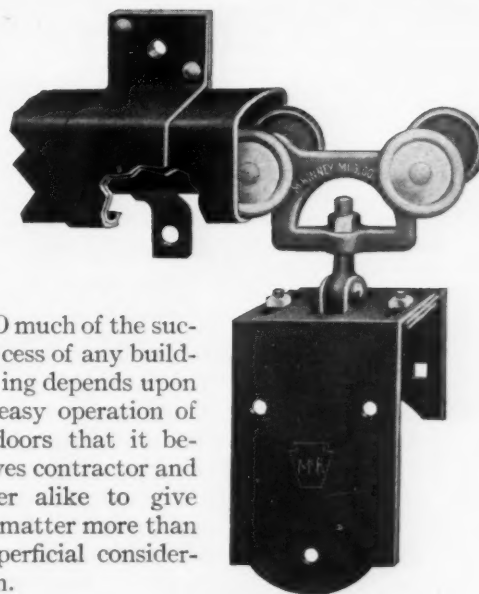
SILVER LAKE A Sash Cord

The guaranteed sash cord (since 1869 the standard) not only outwears common cords, but outwears chains and ribbons. The name Silver Lake A is printed on every foot of the genuine. Guaranteed full lengths.

Silver Lake Co.
Newtonville, Mass.



The Practical Workman is Sure to know the Reason Why



SO much of the success of any building depends upon the easy operation of its doors that it behooves contractor and owner alike to give this matter more than a superficial consideration.

The 'PITTSBURGH Door Hanger

The widespread popularity of the Pittsburgh Trolley Hanger and Track among builders is largely due to the satisfactory service this door hanger renders under any and all conditions.

Ease of operation is no way affected by storms, birds' nests, warping of doors or settling of the building. The hanger is easy to attach and can be adjusted to doors from $1\frac{1}{2}$ " to $2\frac{1}{2}$ " thick. And what is of interest to every owner—it can't jump the track.

Better try the Pittsburgh Trolley Hanger and Track on the next barn, granary, garage or warehouse you erect. Write now for your copy of Builders' Catalog "A-11".

McKinney Manufacturing Co.
Pittsburgh, Penna.



For Every Bench Use There's a Sargent Automatic Set Plane

And every user feels it's a different plane by the way it takes hold of **any** wood.

Here's why: Thin Cutter with quicker grinding advantage, Rigidity for sure work, Quick and Easy Adjustment for coarse or fine cuts, Adjustable Knob, and Automatic Set, by which the clamp, when released after removal, will always return to its original position until reset.

Ask your dealer to show you the Planes that do work not possible with other planes, or send for catalogue describing these and other Sargent Planes

SARGENT & COMPANY

51 Water Street
New Haven,
Conn.



SARGENT

REG. U.S. PAT. OFF.



VAUGHAN'S Vanadium Nail Hammer

Vanadium is a purifier of steel. The best vanadium obtainable is used in making the **Vaughan Hammer**. Each hammer is tested and tempered individually. The handle is carefully shaped for the hand and has a wax hole in the end for waxing nails to be driven in hardwood. The claw of this hammer grips—it never slips.

If your dealer does not carry the Vaughan Vanadium Hammer we will send it to you prepaid. Let us have the dealer's name, too.

Vaughan & Bushnell Manufacturing Company
2114 Carroll Avenue Chicago, Ill.

The Toughest, Strongest
Hammer Made



\$1.50
EACH



No. 41 16 oz. Full Polished No. 42 13 oz. Full polished



GOODELL PRATT

1500 GOOD TOOLS



Write for Complete Catalog

Goodell-Pratt Company
Greenfield, Mass.

Toolsmiths

WHY not use the particular size, shape and grade of pencil or crayon suited to your work? You will find it among

Dixon's Pencils

Send us the name of your dealer from whom you purchase pencils and crayons together with sixteen cents (\$0.16) in stamps and we will send our liberal sample assortment No. 183-J, as illustrated.

Made in Jersey City, N. J.
—by the—

Joseph Dixon Crucible Co.

LUMBER
CITY N.J.

K No 997

1802

N'S 410

ERS, 538



Most of You Mechanics Use **DISSTON** SAWS AND TOOLS

Do You?

Ask any hardware dealer what saw the mechanic prefers and the chances are he'll tell you the DISSTON. Most mechanics DO use the Disston—a recent investigation again proved that fact.

The endorsement of the majority of skilled artisans, men whose livelihood depends on tools, ought to be a pretty safe guide.

The chances are more than even that you use the Disston now; but if you don't, try them next time.

Henry Disston & Sons, Inc.
Philadelphia, U. S. A.

BRANCHES:

Chicago
New Orleans
Bangor
Boston

Memphis
San Francisco
Portland, Ore.
Cincinnati

Seattle
Vancouver, B. C.
Sydney, Australia

Canadian Works: Toronto, Canada



You Can Lay a Job Like This—With Asbestone

Any mechanic can earn some nice extra money each month by laying Asbestone over old floors, making perfectly new and sanitary floors for Sun Parlors, Kitchens, Halls, Bath Rooms, etc.



The Floor That's Laid
With a Guarantee

Asbestone looks and wears like tile, yet is warm and resilient. Write us the size of space and we shall send free samples, prices and full information. Also ask about our Magnesium Stucco.

Franklyn R. Muller & Co.

794 Madison St.

Waukegan, Ill.

Northwest BUILDING MATERIAL EXHIBIT

Look Before
You Build

ECONOMY

It's Free to
See

PLUS INCREASED SALES

Will direct you to the
Northwest Building Material Exhibit

for office space combined with an Exhibit of your product. Ideal arrangement. Private offices if desired.

Our rental is low, and it includes:

- Unlimited local telephone service, over both Northwestern and Tri-State Systems, including the taking care of your calls when you are not in your office.
- The services of the entire Exhibit Organization in furthering your interests.
- All privileges of the plans and specifications department, which is growing bigger and better all the time. We are now getting in some thirty sets of plans per week.
- Electric Light. Towel Service.
- Refrigerated Drinking Water.
- Public stenographers on the floor to do your work at 50c per hour.

In fact, we have on this floor every service and equipment of a completely equipped organization, and the rental of the space includes everything.

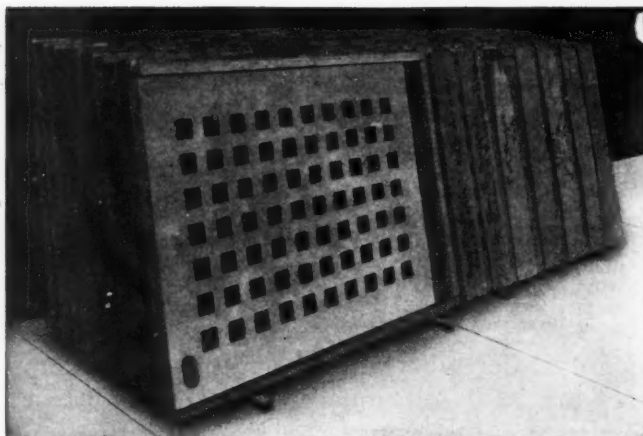
Our representative will be pleased to call on you and go into matters more in detail if you so desire, but we would much prefer having you make a visit to the Exhibit.

Splendid downtown headquarters for Minneapolis firms

Ideal arrangement for offices of Agents of out-of-town firms

200 Permanent Exhibitors on one floor

Northwest Building Material Exhibit
Entire Fourth Floor, First National Soc-Line Bldg.
Minneapolis, Minnesota



Labor is Scarce!

Make quick work of your sidewalk light installation by using American 3-Way factory finished SLABS

FORMS, staging, high-priced cement finishers and the attendant muss and trouble is eliminated when

American 3-Way Factory Finished Sidewalk Light Slabs are used. You merely take the slab out of the crate, slip it into its seat in the sidewalk and caulk the joint. ¶ All our lenses are made of specially annealed LAZALITE GLASS with plastic malleable coating on side walls to take care of expansion. ¶ We have several shapes and sizes based on the 3-Way principle.

ASK FOR CATALOGUE 16-L

American 3-Way Prism Company

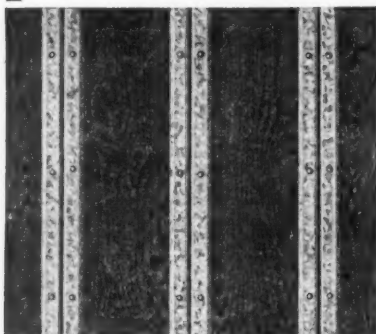
Manufacturers of Prism Products, Sidewalk Doors, Coal Hole Covers

Main Office and Factory: LA PORTE, IND.

Branch Office and Factory: Spring and Wooster Sts., New York, N. Y.

WILLIS BATTEN STRIPS

Easy to Apply -- Edges Lay Tight



Galvanized Iron Batten Strips never warp, split or draw away from the boards. They make neat, absolutely-tight joints allowing for expansion or contraction of siding so nails will not become loose. Makes buildings perfectly wind and weather-proof, and is also valuable for lining grain bins, etc.

Willis Batten Strips are very easily applied and lay absolutely tight, offering no obstruction to sliding doors. These Strips are easy to cut, so there is no waste. Manufactured in 6, 7, 8, 9 and 10 foot lengths.

SAMPLE AND PRICES FURNISHED UPON REQUEST

WILLIS MANUFACTURING CO. Galesburg, Ill.
Sheet Metal Building Products

MAKE Hanging Storm Sash Easy, Quick Work



Done in a jiffy when your storm sash are equipped with **KEES** (Gossett) Hinges. Put on in no time. No tools or ladder needed. Simple, inexpensive, satisfactory. Millions in use.

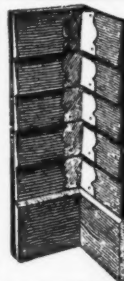
KEES (Gossett) Hinges for Storm Sash

Made of either wrought steel japanned, solid brass, solid bronze or galvanized steel—screws to match. Our storm sash fastener makes opening and closing of sash easy. Holds sash open for ventilation. Windows can be raised or lowered to suit. A great combination. Write for FREE Samples for Trial NOW! Address.

F. D. Kees Mfg. Co., Box 552, Beatrice, Neb.

Chief Metal Building Corners

Warp-Proof—Rust-Proof—Fit Anywhere



They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

Chief Corners protect buildings from injury and are practically indestructible. Furnished ready perforated for nailing to the siding. Put on easily and quickly. Can be painted any color or left unpainted as desired.

Write for free sample and full information



SHRAUGER & JOHNSON :: 430 Walnut St. ATLANTIC, IOWA

THE MORE YOU KNOW ABOUT

BOGALUSA

EXTRA DENSE LONG-LEAF PINE

THE MORE YOU'LL REALIZE THE
VALUE TO YOU OF RECOMMENDING IT.*"BOGALUSA" is the name BY WHICH TO BUY
the BEST LONG-LEAF PINE THAT GROWS.***FOR ALL STRUCTURAL USES, SPECIFY
"BOGALUSA"—that is your guaranty.** And if
you don't see "Bogalusa" stamped on EVERY
PIECE or bundle *you'll refuse it as "not per order."**WRITE US. (Cutting 1,000,000 feet a day still
leaves us time to take an interest in YOU.) There's
a real value for you in the Bogalusa Book. (Free.)***GREAT SOUTHERN LUMBER COMPANY,**
MEMBER SOUTHERN PINE ASSOCIATION
1600 Fourth Avenue Bogalusa, La.**BOGALUSA**

"Desco" is the result of our 28 years of
experience in the manufacture of Store Front
construction. Working with builders since '89
has taught us how to handle your orders.

"Desco" is made of solid, heavy-gauge copper; the
corner and division bars are reinforced with heavy
steel channels treated by the Parker Rust-Proof
Process. Safety to the glass is one of the dominant
"Desco" features. The glass in the sash rests against
creosote-dipped blocks—a veritable cushion.

Detroit Show Case Co.

491 Fort St., W.

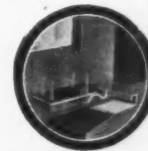
Detroit, Michigan

**WHITNEY
CASEMENT
WINDOW HARDWARE****Makes Trouble-Proof Casements**

—casement windows that build profits and reputation for
you—that always open easily and quietly, do not interfere
with screens, open outward, out of the way; can be easily
moved to any point in the opening, permitting an unob-
structed view; are self-adjusting, affording perfect control
of ventilation, and are weather-proof when closed.

We manufacture only the patented Whitney Window Hardware
and screen fittings—use any style sash you wish. If you cannot
get the sash locally, we will quote you on your requirements com-
plete, F. O. B. Minneapolis.

Our Service Department has some interesting and profitable
information on remodeling work. Write for it. They will help
you, without charge, to adopt Whitney Windows to any unusual
requirements. Interesting portfolio sent upon request. Special
prices to contractors and builders where we have no dealers.

**Whitney Window Corp.**309 So. Fifth St.
MINNEAPOLIS, MINN.**Make Money Building
STORE FRONTS**

THERE'S big profit in it and our plan helps you to make
it. We sell "Desco" Store Front construction direct to
you and at a price lower than you've been accustomed
to pay. You'll cut the cost of installation, too—it's so simple.
Any of your men can install it right and there'll be no danger
of breaking the glass.

Desco
METAL
STORE FRONTS

This is the big Store Front year. Live
merchants need modern Fronts. Now's
your opportunity to cash in on this Store
Front boom. Send this coupon for
"Desco" details and prices. Remember,
there are no salaried "Desco" salesmen—
we sell direct to you. This coupon will
bring full particulars.

COUPON

DETROIT SHOW CASE CO.,
491 Fort St., W., Detroit, Mich.Send "Desco" details and prices without
obligation.

Name

Street

City

Get a Jaeger BIG-AN-LITTLE and add units as you need them

WHY spend more money for a larger, more cumbersome machine when, with a smaller investment and operating cost, the Big-an-Little will do your average job in a first class manner?

The Jaeger Units will make it fit to do any big work that might turn up.

The cost of the Big-an-Little amounts to but 45c a day for a year. After that the expense is limited to the slight operating cost. No builder can mix by hand at this price.

The machine is the result of years of experience and the value of every part has been tested by time. It is a Quality machine thruout.

No machine could be more simple or easy to operate. A turn of the handle dumps the batch directly into the wheel-barrow without waste.

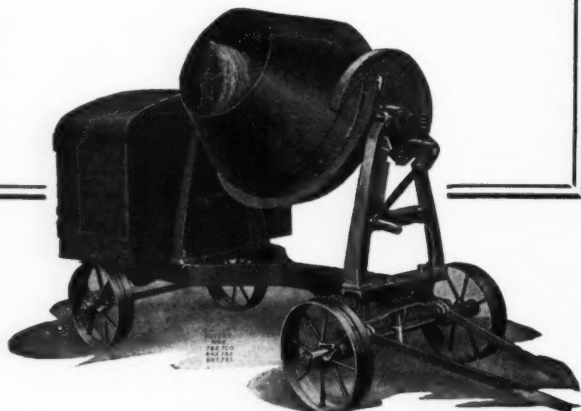
There is no speedier machine on the market. A mix a minute is our slogan.

Big-an-Little Specifications

Capacity 5 to 6 ft. per batch. Drum 34-inch diameter, 30 inches deep. Discharge controlled by gears. Trucks all steel. Wheel 18 inch diameter—48 inches over all. Standard gauge trucks with 20-inch by 24-inch wheels if desired. Engine 3 H.P.—Jaeger Engine. Best that can be produced. Weight 1700 lbs.

Don't put off sending for our prices and catalog of Jaeger machinery. Send a postal now.

The Jaeger Machine Co.
318 W. Rich St., Columbus, Ohio



New Paving Mixer



**Immediate
Delivery by
Distributors
in Every
Large City**

END DISCHARGE

—turns in its own length

5 and 10 Foot Capacity

Same "Northwestern" Engine—Same "Northwestern" Features. Our prices are lowest. Our service is best. Write for Bulletin No. 4, giving prices.

Northwestern Steel and Iron Works

"The House of Good Service"

Capital Stock \$200,000.00

Eau Claire, Wis.

"NORTHWESTERN"

Ask for Bulletin No. 36 on Engines, Hoists, Saw Rigs, Tile and Culvert Forms

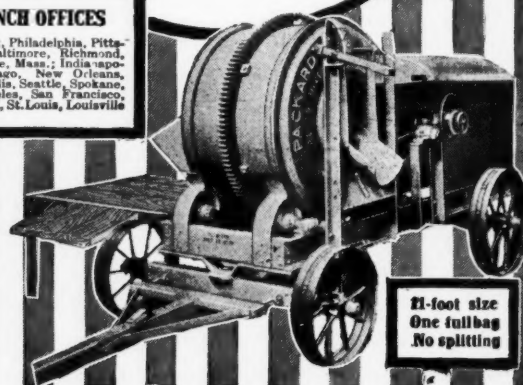
Packard Easy Cleaning Low Charger

Specially made for fast work handling stiff concrete for Curbs, Sidewalk Work and Foundation Work. Hinged Low Loading Platform, only 24 in. high. Patented High-Speed Mixing and Discharge Action. **Mixes Mortar and Plaster.** Built of Steel. Light, Strong, Durable. 2 Sizes—6 and 11 ft. Power loader or batch hopper if wanted. Sold on the "Money Back" plan—cash or easy payments—price astonishingly low. **Prompt Delivery from Stock.** Investigate now. Write, phone or wire nearest branch office for full information on this mixer, also on Grouters, Pavers, Hoists, Pumps and Back Fillers.

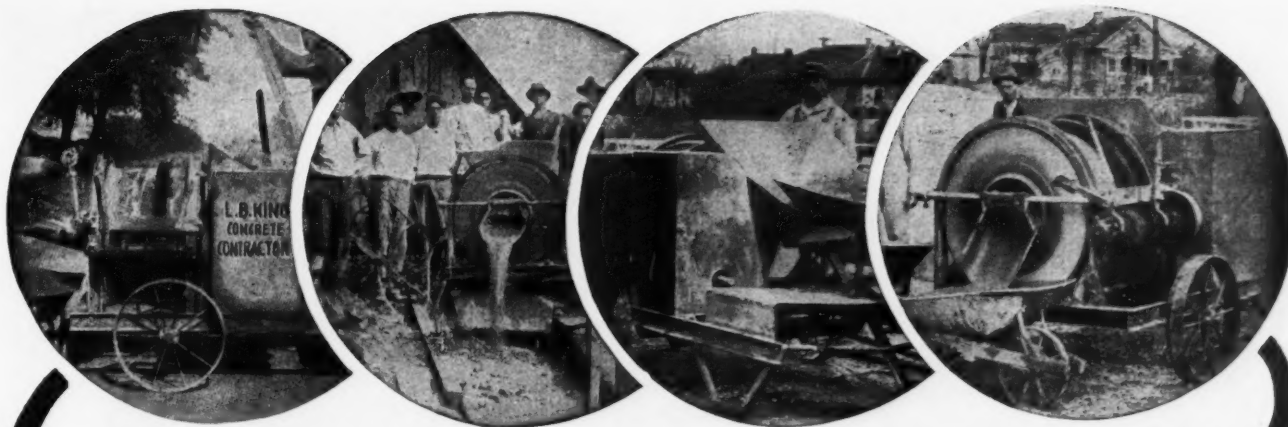
The American Cement Machine Co. Inc.
Keokuk Iowa
THE 300,000 HP ELECTRIC CITY

BRANCH OFFICES

New York, Philadelphia, Pittsburgh, Baltimore, Richmond, Cambridge, Mass., Indianapolis, Chicago, New Orleans, Minneapolis, Seattle, Spokane, Los Angeles, San Francisco, Cleveland, St. Louis, Louisville



**11-foot size
One full bag
No splitting**



Always on the Job--

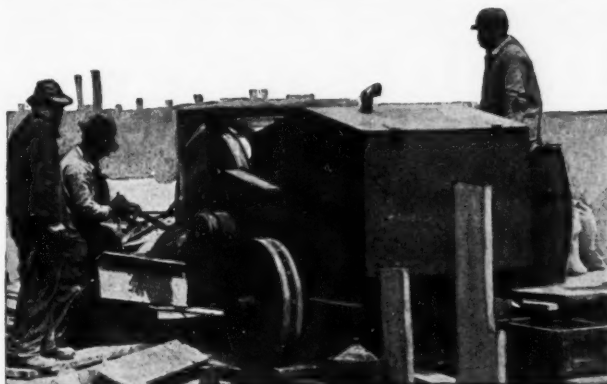
"Little-Devil" Mixer

A Bigger, Better Mixer for the Same Money

Capacity 7 cubic feet of loose material. Low Charging—End Discharge—May be used for Paving, Grouting Brick Pavements, Foundations, Sidewalks and will mix and place concrete quicker and at less labor cost than any mixer on the market. Write today for catalogue, prices and terms.

Chicago Builders' Specialties Co.

1461 Lumber Exchange Building, 9 South LaSalle Street, Chicago, Ill.



DANDIE MIXERS

5 and 10 cu. ft. capacities. May be equipped with automatic water measuring tank, low charging platform, batch hopper and power loading skip, also light duty hoist.

Here is the Big Value light mixer—not the cheap-built, low-priced mixer, but the light mixer built to stand up and built in big quantities to keep down the price.

It is the right mixer for the big contractor who needs light machines to supplement his big capacity mixers, and of the contractor who does general work and demands a reliable, strongly-built mixer at a medium price.

Building these mixers in big quantities and standardizing every part the price is kept down and the quality kept up. This is why Dandie Mixers are the big value of the industry. Write today for special booklet.

KOEHRING MACHINE CO. MILWAUKEE WISCONSIN

Put a SHELDON Concrete Mixer to Work on Your Next Concreting Job at My Risk



\$11.50 Up

DON'T send me one cent. Just put your money in your own bank. Try a **Sheldon** on your next job entirely at my risk. Send for the style **Sheldon** Mixer you need today. When it arrives put it to work. Give it the toughest test you can think of. Keep track of the amount and kind of work it will do. Keep track of what it saves you over hand mixing. Then at the end of 30 days if you think you can possibly get along without it, ship it back. That's my no-string, free trial offer in a nutshell. Accept it today.

Don't Pay \$200 to \$500 for a Mixer

You don't need to. The Sheldon will do just as good work for 1/10 to 1/20 the cost. The Sheldon will mix 2½ cubic feet (2 wheelbarrow loads) to a batch. Will keep one to six men busy. Will save the labor of one to three men. Pays for itself on your first small job. Thousands in use.

Write for Catalog and Special Offer

Let me show you what the Sheldon is like. My catalog will tell you a lot—but nothing like putting a machine to actual work on your next concreting job. Take me up on my offer today. Address **GEO. C. SHELDON, President**

SHELDON MFG. CO. Box 5003, Nehawka, Neb.

BLYSTONE

Made in
2-1-7-9 cu. ft.
capacities

The Customer's Say-so

Gentlemen:—You will probably think this letter unnecessary after receiving a second order for Blystone mixers, but we wish to congratulate you on your success in turning out such an excellent mixer as the Blystone.

We have tried several other makes, which were unsatisfactory in one way or another, and so far have met with none which does its work as rapidly and well as the Blystone.

You have our best wishes for another successful year and our hearty thanks for your aid in solving our mixing problems.

Yours very truly, (Name on request)

This is the general tone of letters we receive concerning the Blystone. This is the only basis on which we will sell you a mixer—real service and complete satisfaction. Blystone materials and workmanship must be of the best—the Blystone must do your work well under your working conditions. Your interests are ours.

If you are not well acquainted with the Blystone Batch Mixer let us send you our illustrated catalog describing it in detail.

Blystone Manufacturing Co.

917 Carpenter St.

Cambridge Springs, Pa.

LANSING No 5**Designed for the Average Builder**

This "half sack" batch mixer does the work of an all around contractor, such as sidewalk curbing and foundation work with the least possible expense. The first cost is small, it costs but little to run and is easily moved from job to job.

Don't fail to investigate the No. 5 before buying. Send for our catalogue No. 202 Many other sizes.



22 Cedar Street, Lansing, Mich.

CHICAGO.....167-169 West Lake Street
NEW YORK.....288-289 West Street
BOSTON.....78 Cambridge (Charlestown District)
PHILADELPHIA.....Corner North American and Willow
MINNEAPOLIS.....517-519 North Third Street
KANSAS CITY.....1413-1415 West Tenth Street
SAN FRANCISCO.....338-348 Brannon Street

Sand's Aluminum Levels**Always Tell the Truth**

The standard of accuracy. And not only the most accurate—but easiest to read, even in the dark. Never rusts—cannot warp, split or crack—and are easily handled.

The lightest levels made—strong and durable because the greatest strength is placed where most needed. Ask your dealer to show you these levels, and also write for our new circulars showing full size levels.

J. SAND & SONS Originators of Aluminum Levels 1023 - 29 Rivard Street, Detroit, Michigan

**Carpenter—Contractor—Builder and Material Dealer**

Write today. Now is the time to take up an agency proposition for the largest and most complete line of Order-Made

WINDOW and DOOR SCREENS

on the market. Turn your idle hours into money. We supply you with a complete agent's outfit consisting of models, contract blanks, advertising matter, etc. We give exclusive agencies to the ones who make good. No regular agencies established in towns less than 10,000 population. We have some excellent territory still open

—ADDRESS—

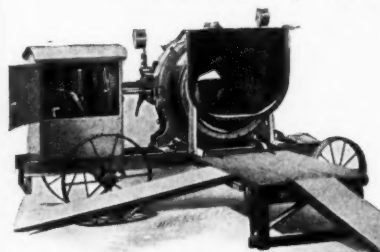
Standard Screen Company

1856 Hastings Street, CHICAGO, ILL.

The T. L. Smith Company

1138 - H - 32nd STREET

Milwaukee, Wisconsin



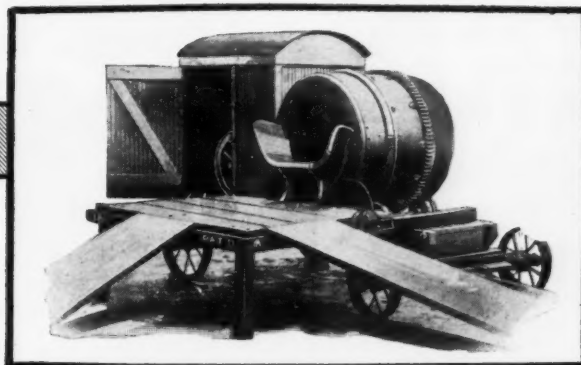
MANUFACTURERS OF

Smith Tilting
Mixers

Catalog No. 68-H

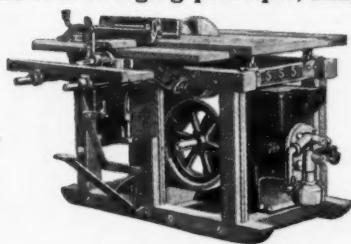
Smith-Chicago
Non-tilting
Mixers

Catalog No. 128-H

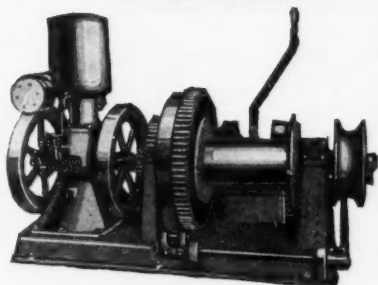


"The Standard" Low-Charging Mixer

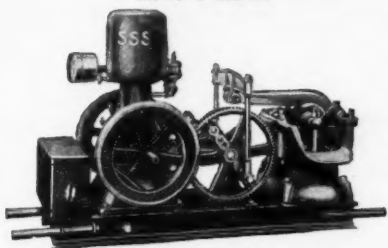
Thousands of contractors have found by actual experience that "The Standard" Low-Charging Concrete Mixer actually cuts the cost of concrete work one-third. This is due to the low-charging principle, simplicity of construction and the absence of mechanical loading devices which get out of order so easily. If you want to know how you can cut your concrete costs one-third, write to our nearest office today for our latest Mixer catalogue.



Saw Table Y-161-157



Hoist Y-161-52



Pump Y-161-97a

"The Standard" Contractors' Equipment

Contractors' Portable Variety Woodworker. Twelve tools in one. A Rip Saw, Cut-Off Saw, a Mitre Saw, a Dado Machine, a Gaining Machine, a Grooving Machine, a Rab-betting Machine, a Jointer or Planer, a Boring Machine, a Matcher, a Moulder, a Sander. Very substantially built throughout and will stand hard, continuous service. We can furnish Saw Benches, Wood and Pole Saws, etc. Complete information on request.

"The Standard" Hoists

A full and complete line of high-grade hoists. Single Drum, Double Drum, Reversible, Non-Reversible, etc. Our catalogue shows each type of hoist and explains the kind of work for which each hoist is best adapted. Write to our nearest office today and ask for Hoist Catalogue.

"The Standard" Pumps

Centrifugal, Diaphragm, Dredging and Gravel, High Pressure Outfits, Trench, Deep Well Outfits, etc. We have an interesting catalogue describing "The Standard" line of high-grade Pumps. Write our nearest office and ask for Pump Catalogue.

"The Standard" Contractors' Equipment Catalogue illustrates and describes nearly every piece of equipment used by the Contractor. A copy is yours for the asking. Ask for Equipment Catalogue No. 44-9.

"THE STANDARD" CONTRACTORS' EQUIPMENT

THE STANDARD SCALE

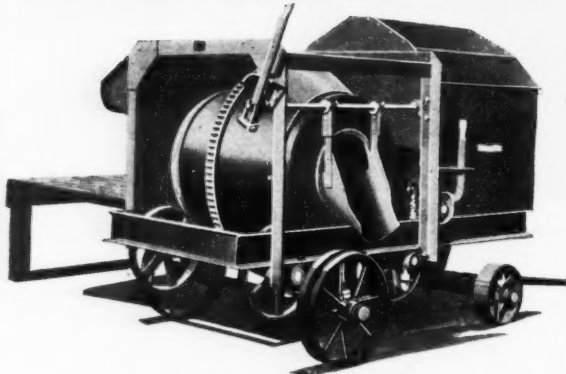
PITTSBURGH NEW YORK PHILADELPHIA
1631 Liberty Avenue 145 Chambers St. 523 Arch Street



& SUPPLY COMPANY

BALTIMORE CHICAGO CLEVELAND
409 N Gay St. 163 North May St. 1547 Columbus Rd.

EUREKA



Low Charger

Mix a Batch and Fix a Batch at the same time with the EUREKA Low Charger. A Quality Mixer at a Quantity Price. Will cut your mixing costs and overcome the labor shortage. Let us tell you why.

Write for further information

EUREKA MACHINE CO.

103 Handy Street

Lansing, Mich.

Archer Mixers

The Original End-Discharge Mixer

Any mixer advertised in this paper will mix concrete. The **Archer Mixer** will do all the work that the most expensive will do—and do it better, too—

and besides

saves men, because you can do without any wheelers to haul wet concrete to the forms. The end discharge drum permits you to back the mixer right up to the forms and discharge direct.

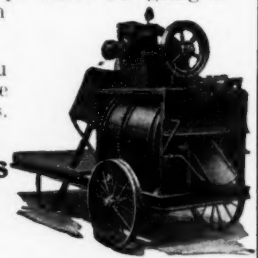
Saves Time because the two wheeled truck can be moved anywhere on the job in a few minutes by a couple of men. Except where the going is rough one man alone can handle it.

Write today and we will tell you why the **ARCHER** is worth more to you although it costs you less.

Archer Iron Works

2439 West 34th Place

CHICAGO





RANSOME

Registered U. S. Patent Office

Well Mixed Concrete for Permanence—Ransome for better mixing
(Member National Association Mixer Manufacturers)



The Ransome Bantam Mixer line, from the Ransome Bantam Junior to the Ransome Bantam Paver is the most efficient line of mixers ever produced. The Ransome Bantam is practically the American Standard. It means rapidity, efficiency, long life, low original cost, and economic operation. No waste and no time lost. Write for particulars.

RANSOME CONCRETE MACHINERY CO., 115 Broadway, New York City
Agents in every large City

Factories: Dunellen, New Jersey and Reading, Pa.

Austin Drum Mixer Features



Wide loader and opening into drum permit fast charging without clogging.

Design of mixing blades such that the mix is carried over on discharging chute very wet, allowing rapid discharge, either entire batch or part.

4-H. P. hopper cooled gasoline engine, or steam or electric power. Twenty gallon steel water tank and steel engine housing.

One position control. Capacity 60 to 80 cu. yds. per day.

Write for Bulletin 7-D

Municipal Engineering & Contracting Co.

Main Office: Railway Exchange Building, Chicago

New York Office: 30 Church Street

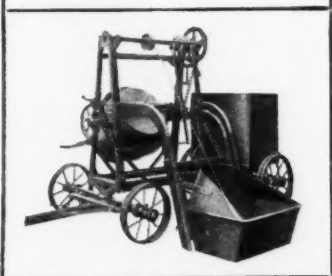
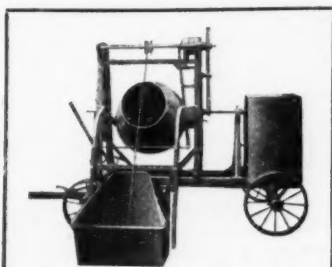


"Concrete for Permanence"

THE DAWN OF A NEW NAME



"Built on the Square"



"Sold on the Square"

FOR fourteen years the name STEWART has been identified with the Concrete Machinery business.

Throughout our big plant—at the fairs—on the road—at the Cement shows—in the publications—on the job—everywhere, STEWART has always been in evidence.

Thousands of contractors have met STEWART, talked with STEWART, bought from STEWART and used STEWART products and inventions.

Yet—as a name for a firm and as a brand for a line of Concrete Machinery—STEWART is really a new name.

It's a good name, though—because it stands for honesty, integrity, and a policy of building and selling goods strictly "On the Square."

We thank the thousands of customers who have helped make STEWART a success and write this message as a greeting and an invitation to all readers to get acquainted with STEWART and the STEWART way.

The Stewart Mixer

The STEWART Mixer is a new machine, or rather a new model, built along old principles, by an old firm. In fact, it's built by STEWART with fourteen years of Concrete Machinery building and a lifetime of engineering and contracting experience as a foundation.

It has been tried and tested in every possible manner.

It is a mixer you can count on to start a job and finish a job with a perfect score.

In fact, it is "Built On The Square" and "Sold On the Square" and is guaranteed to give satisfaction.

Five sizes and fifteen styles give you a big line to choose from so you are bound to find a STEWART Mixer for your own individual needs.

Write today for prices and information. Let us tell you about this machine and the STEWART way.

Stewart Manufacturing Company

Successors to The Cement Tile Machinery Company

46 Rath Street, Waterloo, Iowa

Builders of Concrete Mixers, Block Machines, Block Tempers, Sand Screens, Sand Elevators, Tile Cars, Block Cars, Brick Cars, Dump Cars, Transfer Cars



Drain Tile is Wanted Quick!

THE demand for drain tile has kept every plant in the country working at full capacity for the last six months. At least three times as many can keep busy for several years to come.

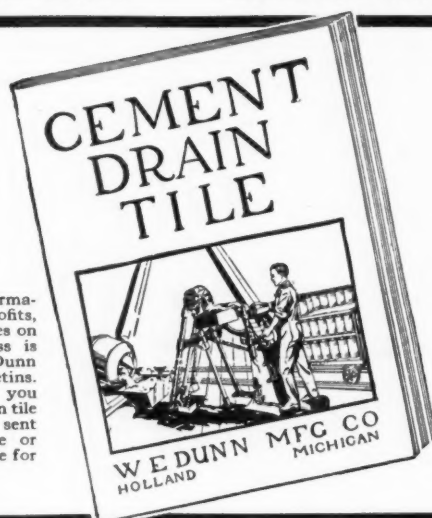
Intensive development of the land is possible only by proper drainage, and drainage demands drain tile. Clay tile is hard to get, besides being inferior in quality to cement tile.

A small investment for a Dunn Cement Tile Equipment will put you in direct position to earn from \$14 to \$50 per day. Manufacturing is easy, the product is sold just as soon as it is made, and the demand will continue for many years to come. To make cement tile is a profitable business and a patriotic duty.

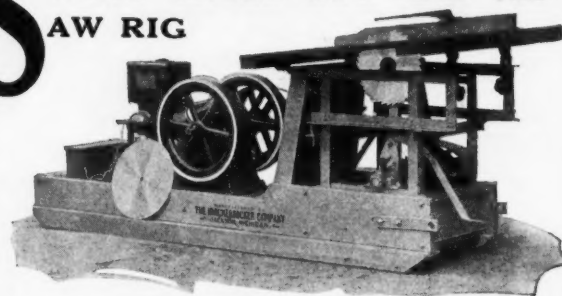
W. E. Dunn Mfg. Co.
415 24th Street Holland, Mich.

Send
for
This

Complete information on costs, profits, and other angles on the tile business is given in the Dunn Drain Tile Bulletins. This will post you fully on the drain tile business and is sent without expense or obligation. Write for a copy today.



SWING CROSS-CUT AND RIP SAW RIG



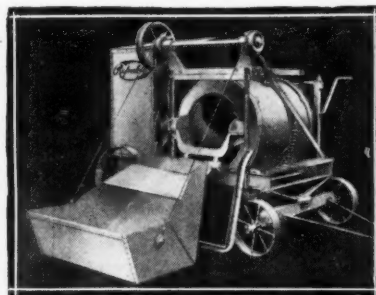
A swing cut off machine operated by means of a foot lever for cross cutting and locked in a station any position for ripping. The table top is hinged and adjustable for any depth of ripping—is 36" high, 35" long, 52" wide, 1 1/2" thick. Will take any size rip and cut off saw up to 18 inches. Given the severe test of twelve hours steady work a day, seven days a week, on army cantonment camp work.

We Build Woodworking Machinery—Concrete Mixers—Mortar Mixers—Hoists—Pumps

**THE KNICKERBOCKER
COMPANY**

525 Liberty St., Jackson, Mich.

W



Efficient Mixing

The several recent improvements incorporated in our mixer makes it a wonderfully efficient machine, giving larger capacity in a lighter weight machine with a

corresponding reduction in price. Sizes: 3 1/2, 5, 7 and 10 ft. capacity. Get our catalogs, prices and terms.

LIGHT WEIGHT—SACK SIZE—LOW PRICE

REPUBLIC IRON WKS., Tecumseh, Mich.

Capacity—Economy

The Frank, low price mixer will produce a full batch a minute. The mixing is always in plain sight and the machine is simple, nothing to get out of order.

Sold in 3, 5 and 7 foot sizes. Every mixer guaranteed.

INVESTIGATE TODAY

Frank Mfg. Co.

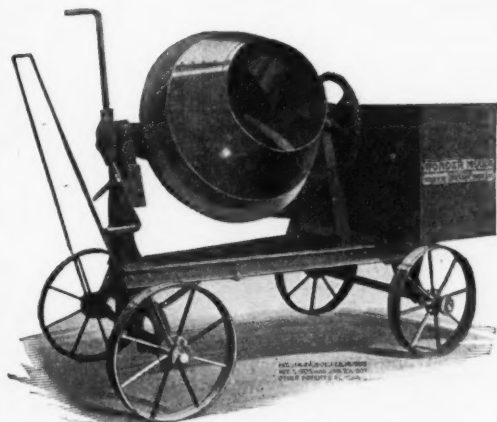
241 Century Bldg.
DES MOINES, IOWA



Inside View, Showing
Door for Unloading

WONDER BUILDERS' EQUIPMENT

Meets War Time needs in Quality, Speed and Efficiency at "Live and help live" price. Nation wide reputation backs your choice of the WONDER and our quantity production and sales make the price a profit-sharing proposition.

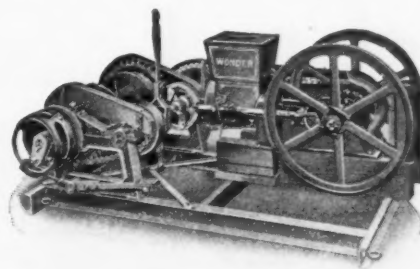


THE WONDER JUNIOR Concrete Mixer

This is the machine, the original model of which displaced the mixing board and opened a new source of profit for the building contractor. It is "The Small Job Money Maker" of the WONDER line, specially adapted to the small jobs every builder can do with great profit—foundations, sidewalks, drives, cisterns, etc. Easily portable, easily operated, easily kept clean. Just the right capacity—3 to 4 Cu. Ft. per batch. Simple, strong, dependable. Can be taken into buildings, handled on elevators and used in cramped quarters. Mixes mortar as well as concrete. 2 H. P. Wonder gas engine—economical—requires little attention—removable for other work. Most value per dollar of investment you've ever seen in a mixer. *Get in touch with it.*

For Larger Capacity And Larger Profits

Take Model 15 with Folding Track Loader. Output equal to any job you'll meet. Loads at ground level—a *real* low charging mixer, *standardized* upon by many leading contractors and engineers for the one big reason that it's the *most profitable*. It's just as important to you to "Buy Right". Know WONDER Superiority as these big concerns know it *if you* want to make money as they make it. Send for the facts before you decide on any mixer. Built in sizes of 5 to 6, 7 to 8 and 10 to 11 Cu. Ft. per batch.



WONDER BUILDERS' HOIST Single Reversible Drum Reversible Elevator Sheave

Specially adapted for building contractors in handling sundry materials by elevators.

Hoisting drum and elevator sheave independent of each other and can be operated in either direction. Chain driven; engine and hoist quickly disconnected and engine can be used as independent power unit. Provided with ample braking facilities and safety guards.

Built in sizes 5-7-9 H. P.

Easily portable, ruggedly built, efficient, moderate in price.

Two driving sprockets furnished, permitting two line speeds and load capacities with same outfit at no added expense.

We can furnish complete outfits, including hoist and Single or Double Cage Elevator.

Ask for Catalog

Waterloo Cement Mach'y Corporation

103 Vinton St. : : Waterloo, Iowa



See perfect balance of machine when the loader track is folded for moving. Note the quick emptying skip.

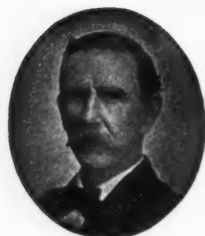
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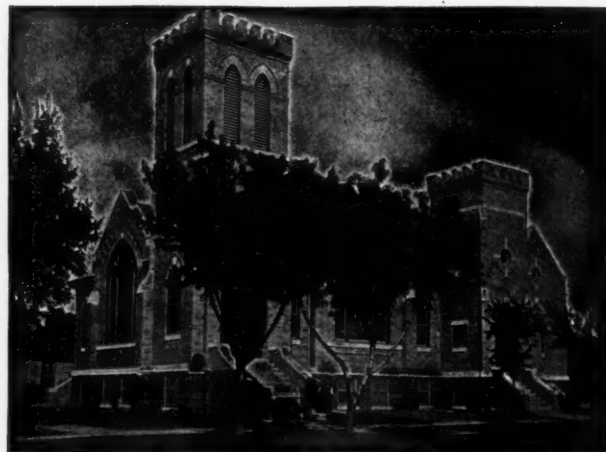
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Let me design your CHURCHES

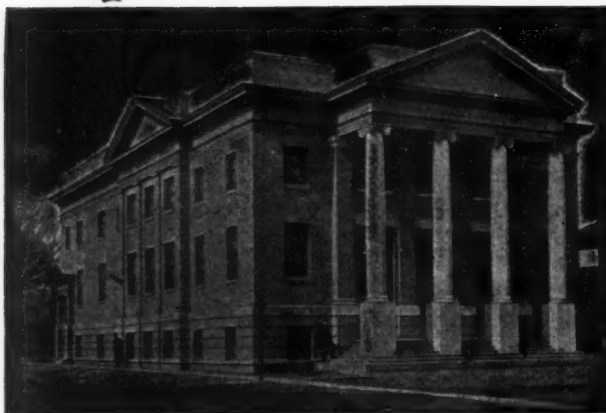
My experience in church work is valuable to you. My knowledge of church architecture assures your getting the most approved, up-to-date designs. The work I have done for hundreds of Builders, Contractors, and various Church Boards throughout the country proves that I can do satisfactory work for you. I can plan a church to meet your needs.



Presbyterian Church

Minden, Nebr

I CAN SAVE YOU MONEY



First Congregational Church

York, Nebr.

by furnishing plans and specifications at the lowest possible cost. Tell me what you need. Information is free. You pay me only for actual services. Let me show you what I can do for you. Fill out the coupon and mail it. You pay nothing in advance fees and you will not be obliged to give me the work unless I show you that I can do it better, quicker, and at a smaller cost than anyone else.

ALFRED W. WOODS,
—ARCHITECT—

LINCOLN

NEBRASKA

----- TEAR OFF THIS COUPON and MAIL -----

Alfred W. Woods, Architect,
Lincoln, Nebraska.

DEAR SIR:—

We propose building a church as per details given below. Please send us information as to what architectural service you can furnish us. It is understood that this information costs us nothing.

Proposed Cost.....

Name.....

Frame, Brick or Stone.....

Address.....

Denomination.....

Seating Capacity.....

Town and State.....

Site and Location of Lot.....



ENTRANCE PORCH
THE TREADWELL HOUSE
at Portsmouth, N. H.
Built in 1808

JUST another example of the ability to hold its shape under exposure to trying weather conditions, the long life and the wonderful resistance to decay of

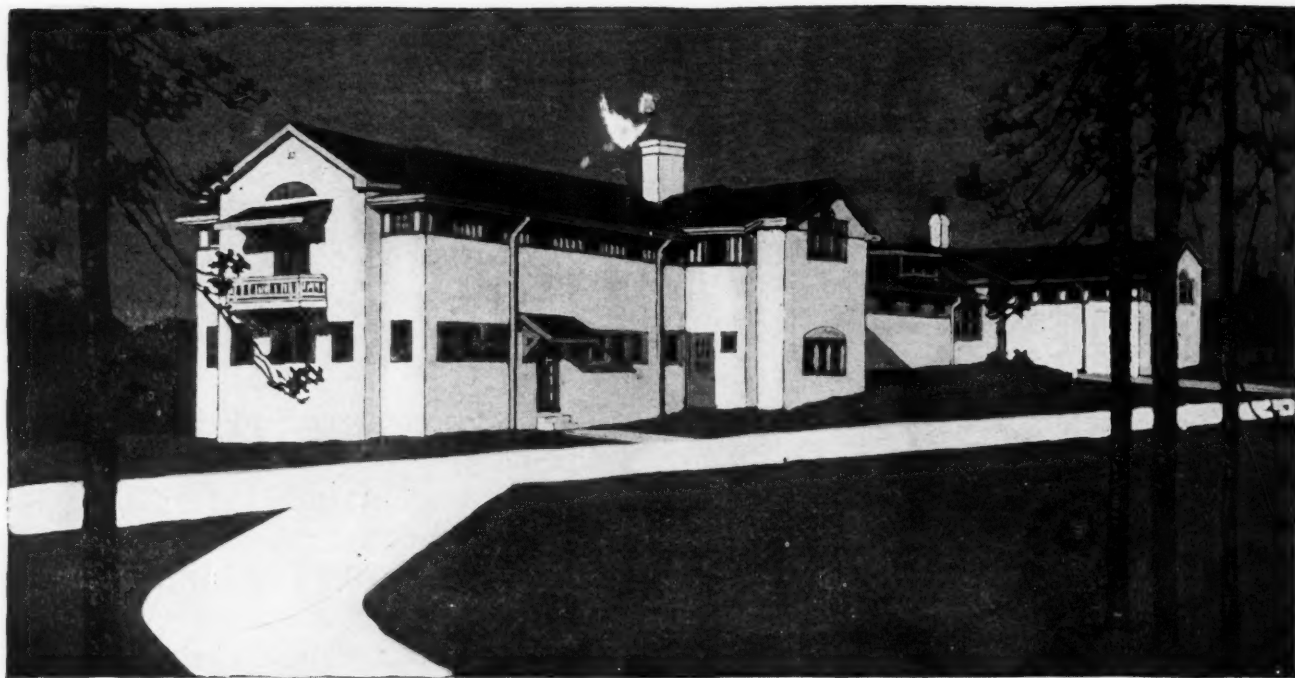
WHITE PINE

Every carpenter knows that no other wood withstands the wear and tear of weather so successfully as White Pine—that White Pine stays where you put it, without warping, splitting, checking, rotting or opening at the joints.

If your lumber dealers are at any time unable to furnish White Pine, we should appreciate the opportunity of being helpful to you in getting it.

*Address WHITE PINE BUREAU,
1835 Merchants Bank Building, St. Paul, Minn.*

Representing
The Northern Pine Manufacturers'
Association of Minnesota, Wisconsin
and Michigan, and The Associated
White Pine Manufacturers of Idaho



Cincinnati Golf Club House

Architects, Flzner & Anderson

A Stucco "Job" That Lasts

Look at the illustration below of Bishopric Board. Note how the Stucco is dovetailed into the lath. The Stucco and Bishopric Board are practically *welded together* into one solid piece. The Stucco *can't* let go—it's *clinched* to the lath. The lath are creosoted, imbedded in Asphalt Mastic on a background of heavy fibre-board. Nails through each and every lath hold the Stucco Board firmly to the frame-work.

Bishopric Board *can't* sag and crack the stucco. The fibre-board, Asphalt Mastic and creosoted lath give absolute protection against heat and cold, wind and weather. They form a construction that is water-proof, vermin-proof and sound-proof.

Bishopric Board is making Stucco finish more popular. It is providing a background that is *dependable*—

that prevents unsightly cracks and breaks and that *gives added life* to the entire structure.

That is why Bishopric Board was chosen for the Cincinnati Golf Club House shown above—why architects, contractors, builders and owners all over the country, who take the trouble to investigate its merits, specify and use Bishopric Board.

The Bishopric Manufacturing Co.

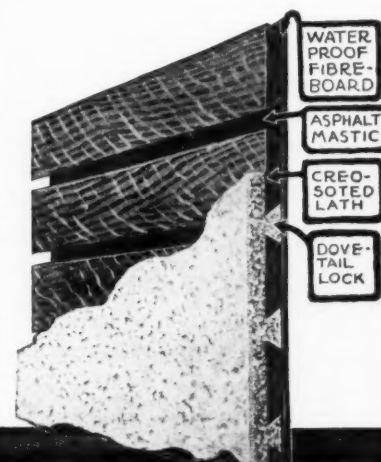
903 Este Ave.

Cincinnati, O.



Write for our free book, "Built on the Wisdom of Ages," illustrating homes, apartments, factory and public buildings finished in stucco on Bishopric Board. It contains letters from architects, builders and users, and extracts from reports of scientific tests. It also gives full instructions for making a stucco mixture that will last. With this book we send free samples of Bishopric Board.

Write *today*, investigate for yourself, be convinced.



"Every Season a Busy Season for BUILDERS"

A Short Talk With Our Subscribers About Our 6th Annual Winter Work Number

What Will YOU Do This Winter?

THIS is close up to the season for looking ahead to bad weather and deciding what you are going to do about it.

We will have a number of things to suggest in the next issue of the AMERICAN BUILDER—a number of practical ideas for keeping the dollars coming in during the winter months. In fact, we have just about the finest assortment of Good Stuff for October that was ever brought together for one issue of a building journal.

But in addition, we want to hear from YOU, and learn what you are proposing to do this coming winter season.

If you have a shop, rush us a photo of it and tell us how you get in the work and handle it. If you are figuring on a shop, let us help you plan it—(No charge).

Or if you have had good success with side lines in past years, taking orders for specialties pertaining to building, write and tell us about it for the benefit of others. What specialties have you handled, which pay out best, and how do you work this business?

Here is an outline of what we are planning for you in our next issue. If you have anything to suggest on any of these subjects, don't be bashful. Shoot it in now and help along this big Annual Winter Work Number.

Keep the Job Going

"Examples of Typical Building Jobs, Winter Handled."

Personal letters from (1) Builders, (2) Supply Men, (3) Building Owners, telling of "Winter Building Benefits."

We all realize how important it is to "Keep the Job Going." Building should be a *twelve months' proposition*. The rush season and the dull season should be ironed out into *good business the year around*. This is the sixth consecutive year

that the AMERICAN BUILDER has campaigned actively for builders, architects, owners, and material manufacturers and dealers to keep building going, in spite of unfavorable weather. Last winter's building kept up better than ever before. The prospects are good for a busy season this year right thru the winter months. There must be no let-up this year.

Or Fit Up a Shop

"What Equipment Will I Need?" (For shop of average size.)

"Making Money in the Builder's Shop."

"Winter Use for the Portable Power Rig."

A great many of the AMERICAN BUILDER readers have power woodworking shops that they get into during the winter months. More and more are doing this every year. Some have portable woodworkers that they use out on the job, and then bring into the shop as cold weather comes on. Some have work for one or two men; some for a dozen. There is good money in the shop proposition, if properly handled. The big problem is what to make that will sell, and how to fit up a shop in a practical way.

Or Take Up a Side Line

"Extra Profits All Around Us."

"Sales Agency Work That Helps Building."

The average builder is a natural salesman. He has to be. In his quiet way he has won the confidence of building owners so that about all he has to do is to recommend a building specialty, and the sale is practically made. During the fall and winter months is the time to get out after these agency profits. There will be a hundred and one practical *tested* ideas for the carpenter and builder sales agent in this big October issue. Don't miss it. EDITOR AMERICAN BUILDER.

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WATER-PROOF FIBRE-BOARD

ASPHALT MASTIC

CREOSOTED LATH

DOVE-TAIL LOCK

CHICAGO

SPRING HINGES REPUTATION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



Chicago "Relax" Spring Hinges

are in great demand. They are substantial in construction and readily applied. The EXCLUSIVE FEATURE of spring action release, allowing the door to be placed at any desired position and automatically re-engaging when the door is closed,

is of recognized merit and utility.

Send for Catalogue C32. It fully illustrates and describes the most complete line of Spring Hinges manufactured

Chicago Spring Butt Company.

CHICAGO

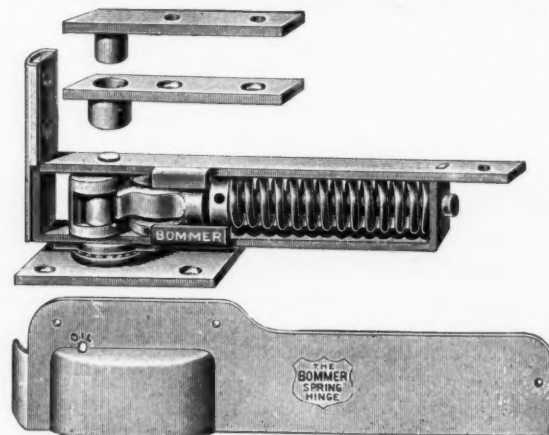


NEW YORK

BOMMER

Floor Surface Spring Hinge

Double or Single Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers, Brooklyn, N.Y.



Rufus D. Wood, Architect, Pittsburgh, Pa.

Read what this Architect says about his own house, which is stained with

Cabot's Cresote Stains

"The shingles of the roof and second story are stained with your brown stain and the plaster on the outside columns with your white Waterproof Cement Stain. A number of the shingled houses in my neighborhood have been stained with creosote (?) stains manufactured by local concerns and their colors are very muddy and disagreeable and do not seem to stand the weather, while mine has retained the original nut-brown color which I desire." (Signed) RUFUS D. WOOD.

Cabot's Stains have been the standard for more than twenty-five years, and are specified by nine-tenths of the architects, who know them from experience. Their colors are soft, rich and beautiful, and guaranteed fast. Their vehicle is Creosote, which thoroughly preserves the wood, and they contain no kerosene or other cheapener. Why experiment with unknown stains, when you are sure of Cabot's?

Cabot's Stucco Stains

are the only artistic cement finishes. They give soft, natural coloring effects, without covering the surface with a paltry coating. They are also cheaper than coatings and easier to apply, and they cannot crack or peel.

You can get Cabot's goods all over the country. Send for samples and name of nearest agent.

**SAMUEL CABOT, Inc., Mfg. Chemists
BOSTON, MASS.**

1133 Broadway, N. Y. 24 W. Kinzie St., Chicago
Cabot's Conservo Wood Preservative, Stucco Stains, Brick Stains, Damp-proofing.

Worth Much to You

Morrill Saw Set



All master carpenters are using this Saw Set. In one operation it takes out the wrong set and puts in the right one. Write for FREE booklet "Saw Points". It tells how to properly joint, set and file hand saws.

CHAS. MORRILL

84 Lafayette Street
NEW YORK

BUILDERS' HARDWARE



No. 546—1½ in. Ant. Cop. Fin. Spring Hinge. Per set.....\$1.20
Weight per set, 4 lbs.

No. 6—Builders' Hardware Catalog sent free. On account of market conditions, we are unable to issue net price list. Send us your hardware list for quotation.

We do not sell to carpenters or contractors in Cook County, Ill.

Rehm Hardware Company
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September, 1917

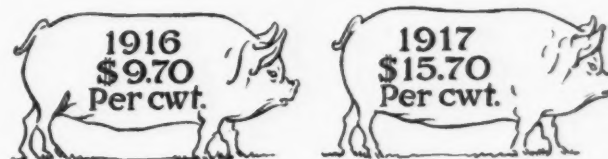
No. 6

NOW, the Best Time for the Farmer to Build

"WHILE there has been some falling off in speculative city building, there is a very large amount of factory construction, and the country trade is good," said John W. Blodgett, Chairman of the Trade Extension Committee of the National Lumber Manufacturers' Association, in a recent interview. "Some spectacular figures have been published as to the quantity of lumber the Government is buying for purposes of national defense, and some of these orders, of course, are very large. But after all the total governmental requirements are not likely to exceed 5 per cent of the yearly lumber production of the country.

"The farmer is the big lumber buyer, and at no time has he been in such a good position to buy the material he needs to build granaries, implement sheds, barns, and all other improvements. Figures just published by the United States Department of Agriculture show that the average price of grain on the farm is exactly double what it was at this time last year, while there has been no such increase in the price of the lumber which the farmer wishes to buy. The manager of a number of retail lumber yards in Minnesota and the Dakotas has recently made some striking comparisons of this sort. The advertisements which he is placing in the country newspapers based upon going prices for farm

products and for lumber at those points show while in 1914 it required thirty-three hogs to buy the material for a seven-room house, the same material can be purchased now for the price of eighteen hogs, and that while three years ago it took 703 bushels of wheat



BIGGER CROPS + HIGHER PRICES = PROSPERITY

Price Building Materials in Terms of Farm Produce Instead of Money and Show the Farmer That Now Is the Time to Build.

A Patriotic Duty of Every American is to

PREVENT FIRE



America at war needs every ounce of her energy and resources. It is criminal to cause hazards; it is unpatriotic to neglect them. Here are some of the ways in which you can help:

1. Learn the factory safety rules and observe them.
2. If you discover a fire, give the alarm promptly. Do you know how to do this? Ask to be shown.
3. **Don't smoke** where it is not permitted.
4. Never drop a lighted match, cigar or cigarette; be sure that it has no spark left before throwing it away.
5. Report suspicious strangers seen about the plant.
6. If you notice any unusual smoke, the overheating of any machine, or any other accident, notify the foreman at once.
7. Carry your precautions into your own home; keep your house and yard free from rubbish, and help others to do the same.

Where would **your** job be if this plant should burn?

Help Uncle Sam

BE CAREFUL

Approved by the National Board of Fire Underwriters
Endorsed by the Council of National Defense



in both hands and then dropping one or two every few steps, they put them in the box and conveniently carry them anywhere the foreman assigns them.

IN this warm section of the universe we use paraffine to grease our saws with. It can be carried in the overalls pocket—always ready to hand—and serves its purpose satisfactorily. And hark!—I saw one of the boys dope up with paraffine the other day a bum joint where he mitered a return on a window stool. It is a poor substitute for good work, but works all right where it is to be painted.

A BRAND new one was sprung on me the other day when a man appeared with teeth filed on the back of his hand saw for about 8 inches from the point. It had us all guessing until he struck a nail. Instead of saying "dammit," he promptly turned his saw upside down, applied the "hacksaw back" and calmly sawed off the offending nail. He had simply filed a little hacksaw along the back of his regular saw!

WHEN you are working around steel much it is a good idea to have a little piece of soapstone to mark it with. Much better than chalk or pencil, and

wears longer. A small soapstone can be sawed into "pencils" with a hacksaw.

ON my present job I have just discovered that it is mighty convenient to have a fine, very strong line for working to and a regular size twist line for chalking. The fine line is much more accurate to work to and does not sag nearly so much.

GOT a splinter into my thumb last week and it broke off too deep to get hold of with my "toad-sticker." Then a brother drew his match box, opened it and took out a pair of tweezers. I have been puzzled for a place to conveniently carry my tweezers for a long time, but here it is at last.

A THREE-FOOT rule is fine and dandy to work with regularly, but several of us have got into the habit of carrying a 5 or 6-foot zigzag or slide as an auxiliary. It is exceedingly convenient sometimes—especially if your foreman has a habit of telling you it is "57 inches" or "49 inches," etc., as ours has.

I NOTICED this same foreman one day rounding off the corners of the blueprints. He said they did not curl up and wear out at the corners so easily. Struck me as a fine idea.

to buy a 32 by 56-foot barn, this same barn can now be purchased for 351 bushels of wheat.

"There is a tremendous volume of business being done throughout the country, as is convincingly shown by recent statistics. For example, during June bank clearings outside of New York City were 72 per cent above the average of the last seven years, with failures 23 per cent below the average. Imports of merchandise in May were 89 per cent above the seven-year average, and exports 161 per cent above. The net earnings of ten leading railroads in May were greater than in May, 1916, and 50 per cent more than the seven-year average. The prices of ingot iron on July 1 were three and a half times those of July 1, 1915. There has been no such advance in lumber prices."



A Few More Pickups

By H. J. Blackledge

WORKING on a large store building I notice that a number of the men have light handboxes for carrying their tools to the various parts of the job. Instead of grabbing up a promiscuous bunch of tools

"Home Builders should fit Houses to People in place of fitting People to Houses"

THE MAN FROM THE LUMBER YARD

The ideas set forth in this letter are like the rat hole Mr. Lincoln told about; worth looking into. Cut out the picture below and show it to every farmer who ought to build this fall. Editor.

IT is because of difference of opinion that there are horse races. It is because so many people have queer tastes that they read my letters.

If you never did get a worth while thought from one before, you will this time. If you have gotten one thought heretofore, you will get two now.

Nerve vs. Nerves

I doubt if many of my friends in the AMERICAN BUILDER pay much of the income tax. If they do not accumulate much money, they do develop muscle. And above all, the builder and contractor develops NERVE.

Nerve is the result of good air, good habits, good training. Nerve does things.

It may be unfortunate that the MEN in the building field do not have more NERVES. If they did they would fit their houses to their customers better.

If you did not travel the valley of the MARNE, over three years ago, you will never be able to appreciate its architecture. You can enjoy such of an-

tiqueness as is to be found and always will be found in Yorkshire.

If you want to find, on this side of the pond, full examples of quaintness, visit Cooperstown, N. Y., and take a ride down the Delaware and Hudson, thru Onconta, Bainbridge into Binghamton, New York. If you want to be oppressed with the flat sameness of residences walk thru the miles and miles of the two-family, two-story residences to be found in Philadelphia and Baltimore. Hundreds of streets and tens of thousands of homes are identical. The only mark of distinction is that your house may have the front door at the left end of the porch.

My door for the eighteen months that I lived in Philadelphia was on the right end of the porch.

With all this sameness of buildings there was as much variety of people as I find on the North Shore drive of Chicago.

I lived in one of these six-room houses that cost, seventeen years ago, fifteen dollars per month rental;



Lest ye forget, I repeat that the man who allows one grain of food to waste or one food producing animal to lower its product is not a patriot. Within ninety days the cold wind will blow, the sleet and rain will destroy what might have been a profit for the procrastinator.

He will belong to the class of those who wept and gnashed their teeth because they had not bought oil.

He will apply his boot to his posterior because he did not contract early enough for his silo and barn.

because I couldn't afford a bigger price.

It would have been impossible, at least unprofitable, to have put any individuality into six-room houses that rented for \$15.00 per. But it is not necessary nor would it be profitable, to standardize the houses that the majority of our people build for farmer Brown, Jones the druggist, and banker Smith.

There is one thing that our builders have overlooked. The sooner they learn it with understanding the sooner will both they and their communities profit. Stated in a concrete way, it is this:

There is a psychology of place as well as of people, and of houses as well as of inhabitants.

It is because the builder is a robust biped free from nerves that it would not make any difference to him if the wall paper were red and the carpet a golden yellow. He would not know that there was a clash

cial charm and distinction about his buildings that I could not account for.

He invited me up to his house one evening and I discovered the reason.

He didn't know the reason of his success. In fact he thought it was his brains and his good luck, whereas it was his wife's brains and ability to manage him without his knowing it.

She was one of those fine-fibred women, all NERVES, very sensitive to any clash or lack of harmony.

It was she who suggested to him those "little things" which gave a charm to his houses and captured buyers.

His home was furnished very tastily but not expensively.

Three times within two years had they sold their home furnished, moving out only their personal effects.

In the course of our chat he told me that some nine months prior to that evening his wife had learned that a well-to-do grocer was expecting to build a home costing about \$8,000.00. Mrs. Builder was quite well acquainted with Mrs. Grocer. Mrs. Builder suggested to her husband that he put up a residence on a vacant lot he had that would suit Mrs. Grocer. Mrs. Builder gave her idea of the type of building and certain kinks that would please her friend. The building was put up and lot graded before the grocer was approached. Within a week after the building was shown Mrs. Grocer, the builder had \$8,300.00 of the grocer's money, and Mrs. Grocer was telling her friends of her good fortune in finding a house exactly meeting her ideals.

I really doubt if any one save Mrs. Builder and I know that Mrs. Builder had fitted that house to

Mrs. Grocer, just as surely as the milliner would have designed a hat to suit, or a tailor a gown adapted to her figure.

The female of the species is much better equipped than the male for designing a home.

Does It Fit?

I wish each one who has to do with home building would get my thought on this. I wish they would try fitting houses to people in place of fitting people to houses. Did you ever notice how upset you are when you smoke a cigar that doesn't fit you? Have you ever been disturbed and your temper worn out by an ill-fitting pair of shoes?

Did you ever give more thought to an uncomfortable pew than to the sermon?

These are all little things but it is wise for the

(Continued to page 136.)



What Do Our Practical Builders Think of this Idea? We always supposed a wide cornice was to protect the upper windows and walls, but this one is pierced to let the sunshine and rain thru. "Another novelty," you will say; "almost makes a bungalow out of it." A prominent Chicago architect is its father.

simply because he has nerve, not nerves.

But the dry goods dealer with an eye sensitive to harmony, would not be able to tolerate it any more than he could enjoy a cold lunch while sitting on the shady side of a pile of manure.

I have seen many of my friends enjoying a hearty lunch, seasoned only with a bottle of cold coffee and a dill pickle, and surroundings that would have upset the stomach of some other of my friends who habitually wear silk shirts.

A Women's Sense

Some ten years ago my travels took me every few months to a city of about thirty thousand people, and I became real well acquainted with a builder who made a specialty of eight to ten-room residences. He always had one under construction. He was a very ordinary type of man, but there was some way a spe-

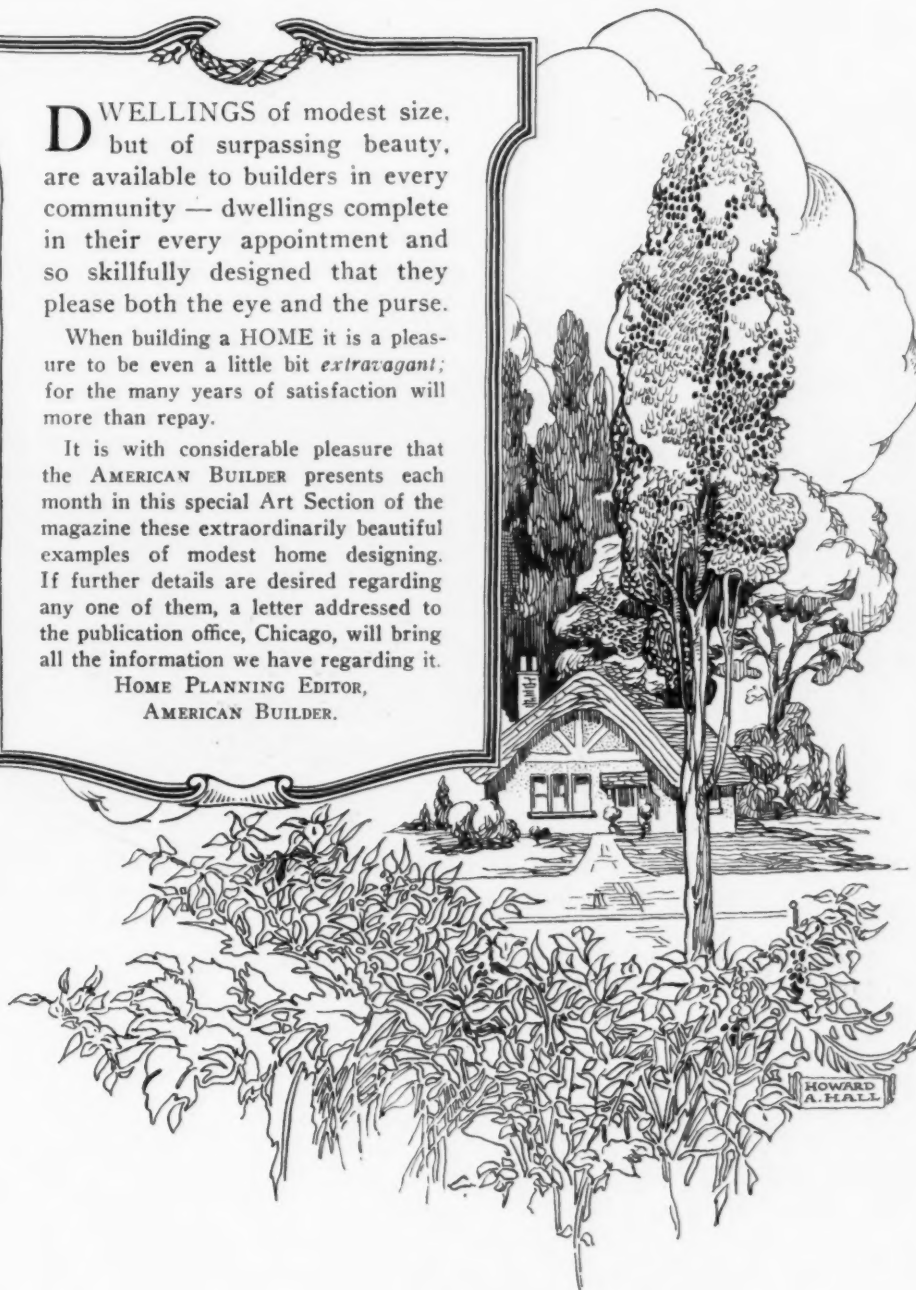
A PORTFOLIO *of* BEAUTIFUL HOMES

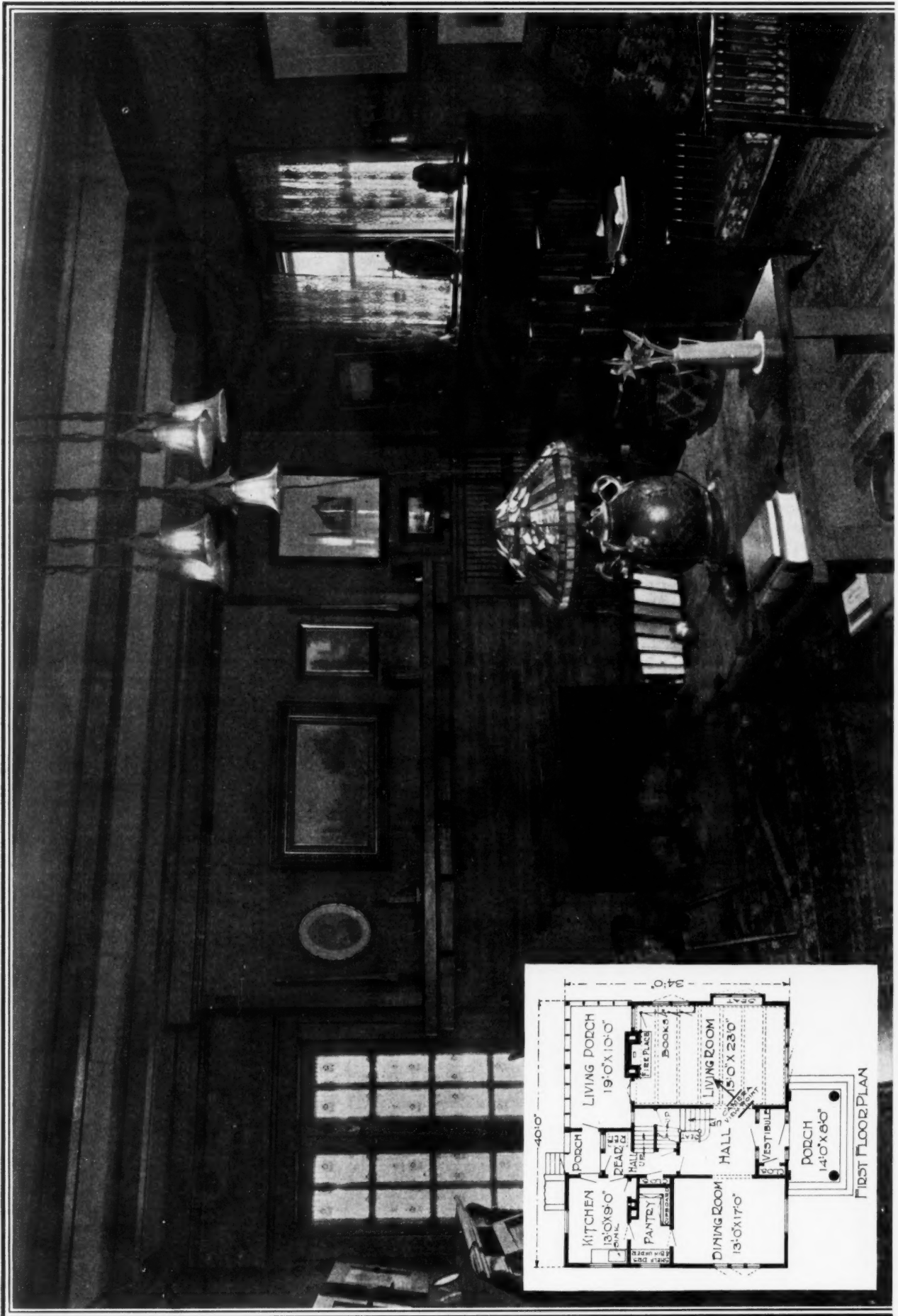
DWELLINGS of modest size, but of surpassing beauty, are available to builders in every community — dwellings complete in their every appointment and so skillfully designed that they please both the eye and the purse.

When building a HOME it is a pleasure to be even a little bit *extravagant*; for the many years of satisfaction will more than repay.

It is with considerable pleasure that the AMERICAN BUILDER presents each month in this special Art Section of the magazine these extraordinarily beautiful examples of modest home designing. If further details are desired regarding any one of them, a letter addressed to the publication office, Chicago, will bring all the information we have regarding it.

HOME PLANNING EDITOR,
AMERICAN BUILDER.



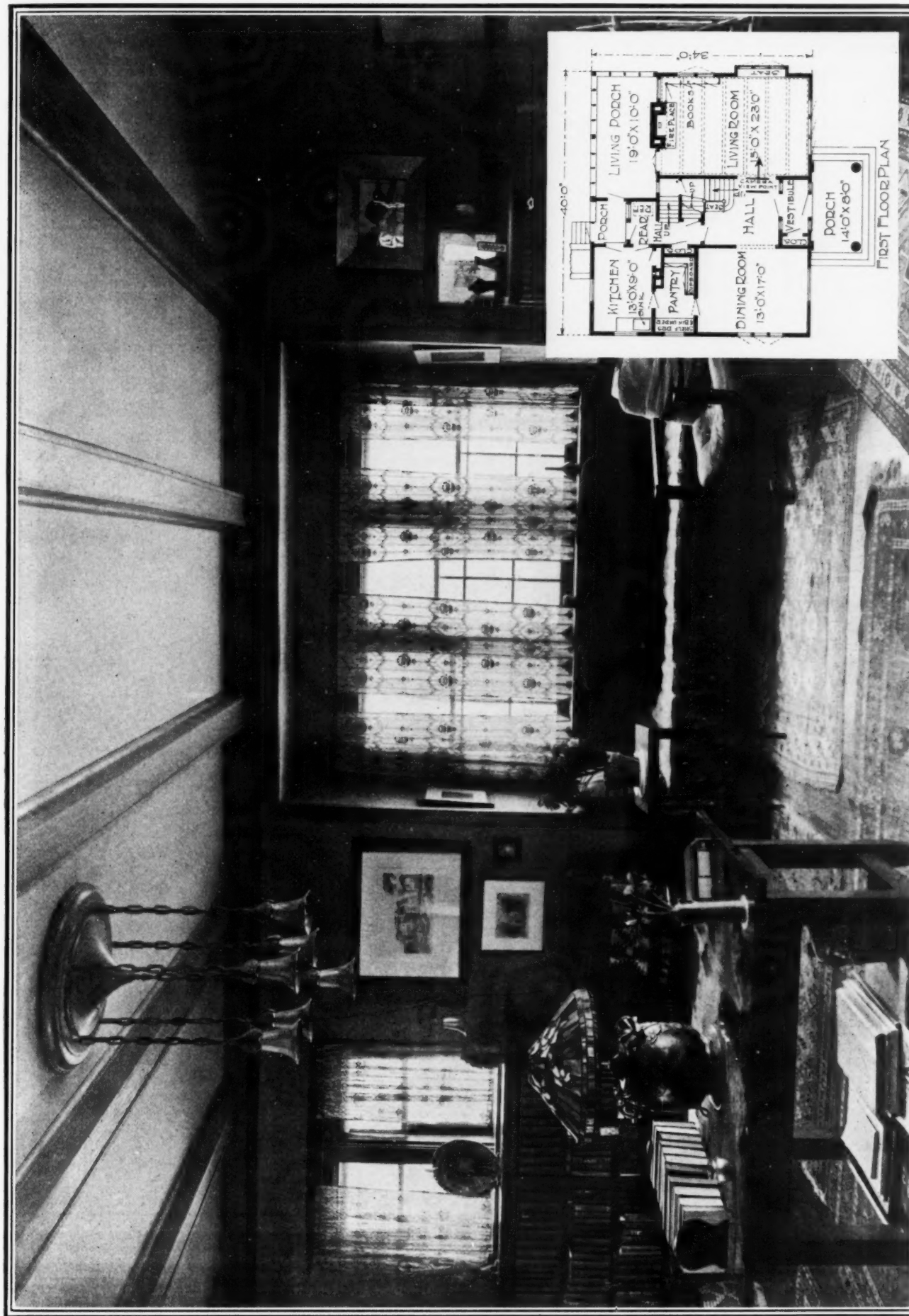


INSIDE A BEAUTIFUL HOME—VIEW NO. 1. With the camera placed as indicated on the floor plan diagram, the home-like warmth and comfort of this fine living room is revealed. This room is 15 by 23 feet in size, and is a convincing argument for the modern style of a few good sized rooms instead of cutting up the space into many small ones. One would scarcely expect such spaciousness in a house measuring 34 by 40 feet.

7
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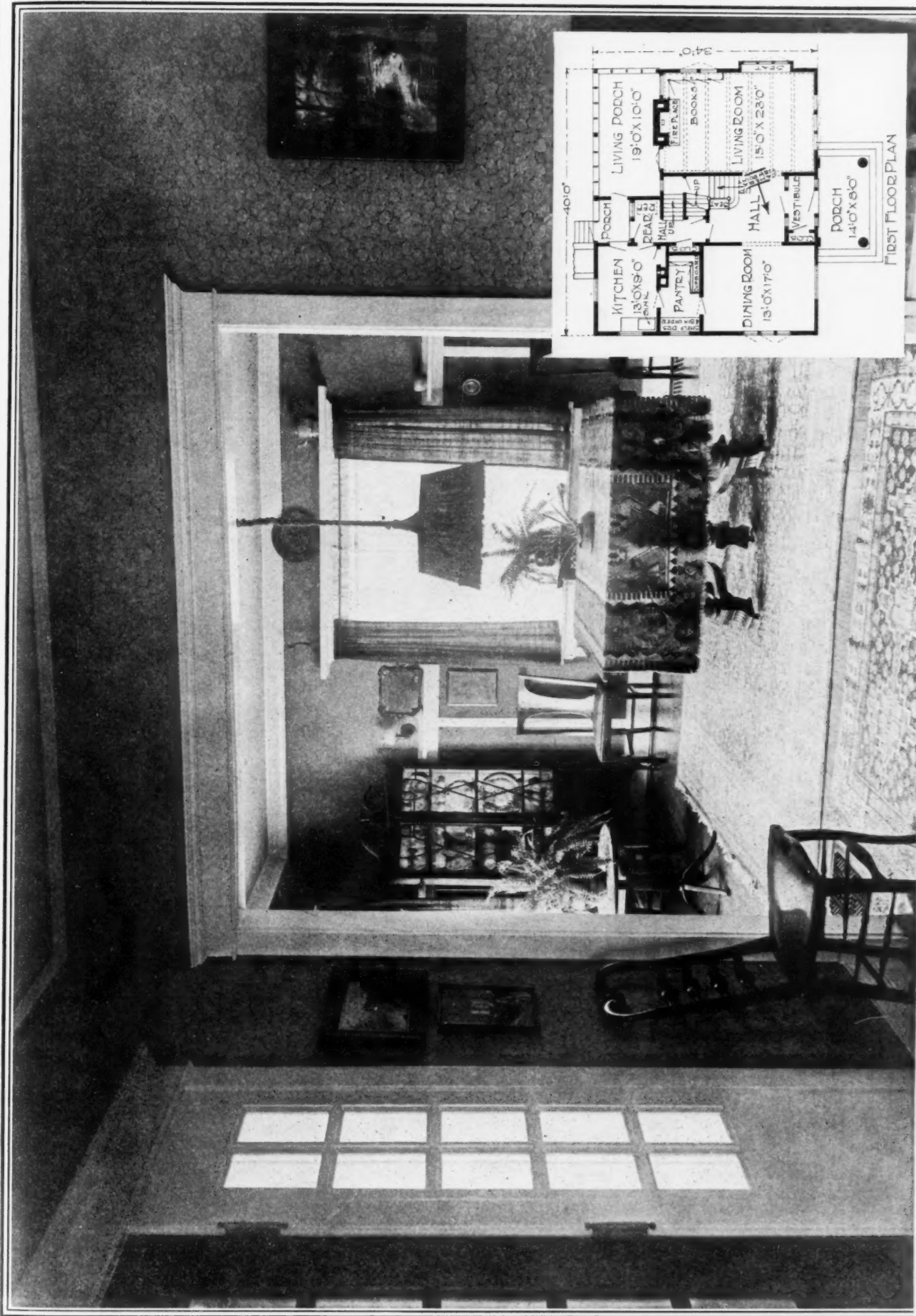
Inside a Beautiful Home

43

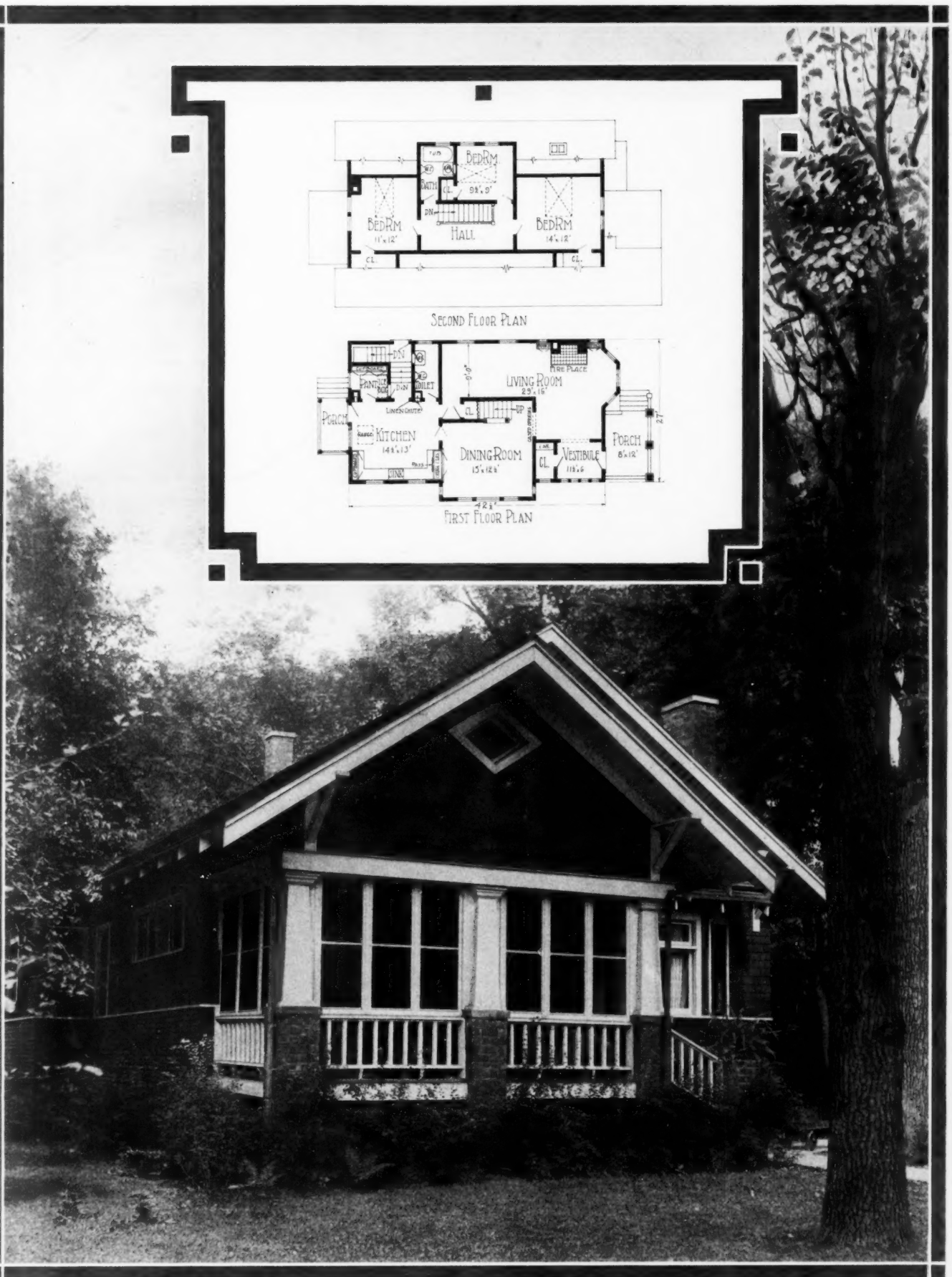


INSIDE A BEAUTIFUL HOME—VIEW NO. 2. Another view of the living room, looking across from the broad entrance door, camera being placed in the doorway. The square bay with built-in seats is the center of light and interest for this end of the room. Notice the simplicity of the wood trim.

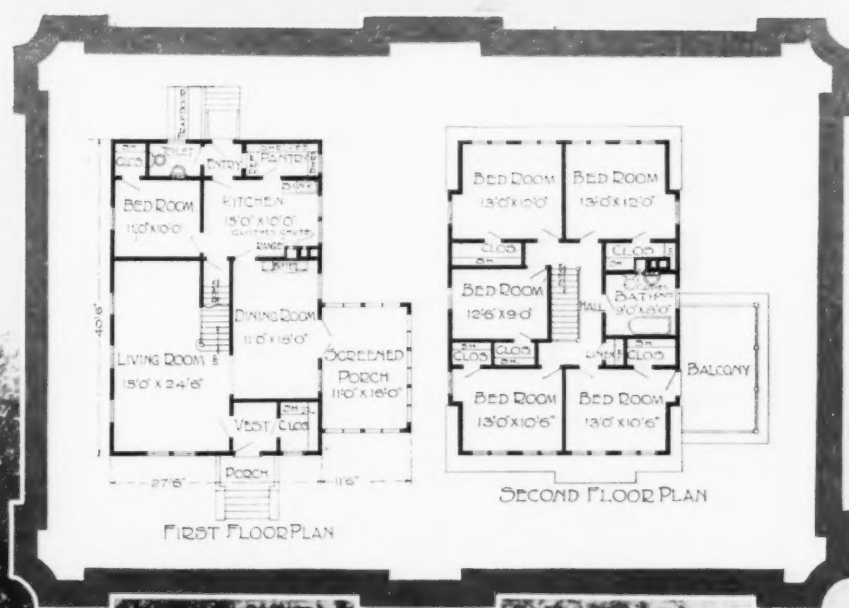
INSIDE A BEAUTIFUL HOME—VIEW NO. 3. Looking into the dining room from the hall. This room measures 13 by 17 feet. The trim is finished in white enamel, swinging door mahogany. A dado with textile panels produces the expected dining room effect.



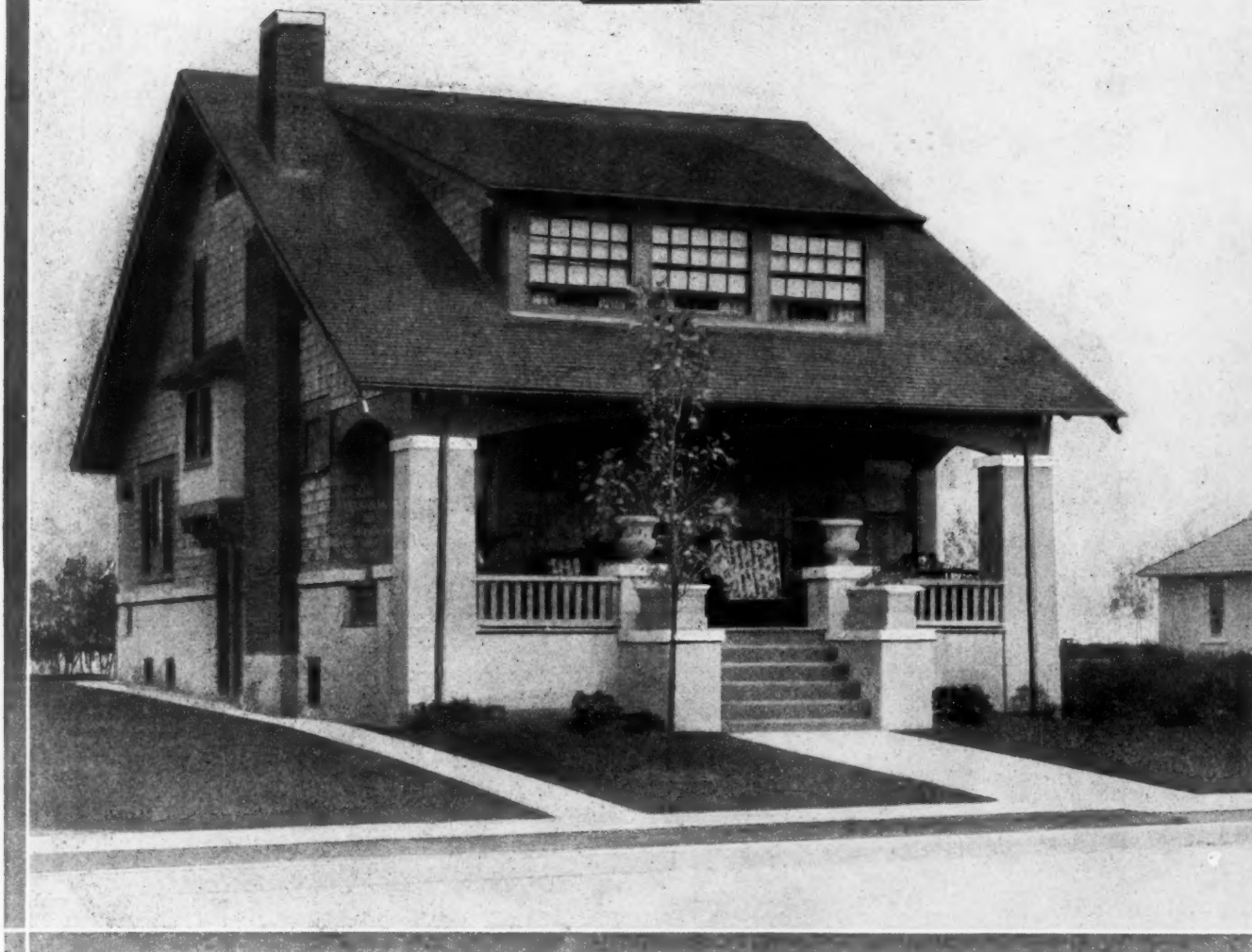
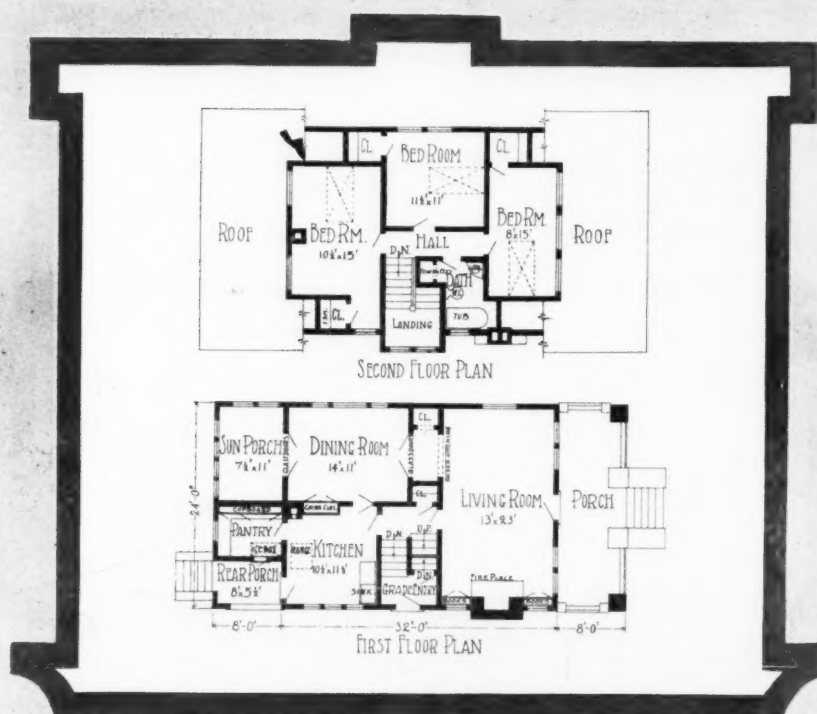
INSIDE A BEAUTIFUL HOME—VIEW NO. 4. Looking across the reception hall into the dining room. Completing a series of photographs of exceptional beauty of the interior of residence planned by the Radford Architectural Company for Mr. Louis Braunhold, the artist who produced our front cover drawing this issue, and erected for him in one of Chicago's North Shore suburbs.



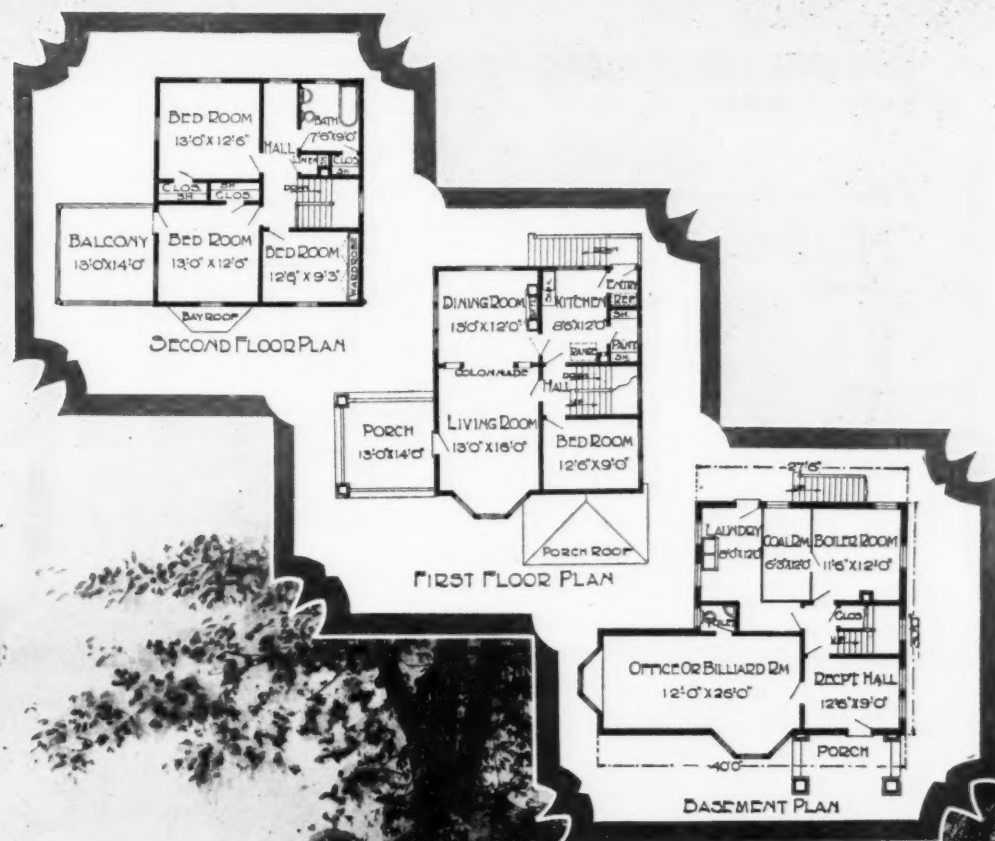
NOVEL FRAME BUNGALOW WITH ESPECIALLY PLEASANT LIVING ROOM. This house has the property of being able to blend itself into an elaborate scenic background. One of the especially interesting details of the room arrangement is the large L-shaped living room. This arrangement is capable of being utilized to advantage in establishing a very cozy living room by the correct selection of furniture. The dining room is well placed with respect to the kitchen and the latter room, with the pantry, form an excellent combination for convenience.



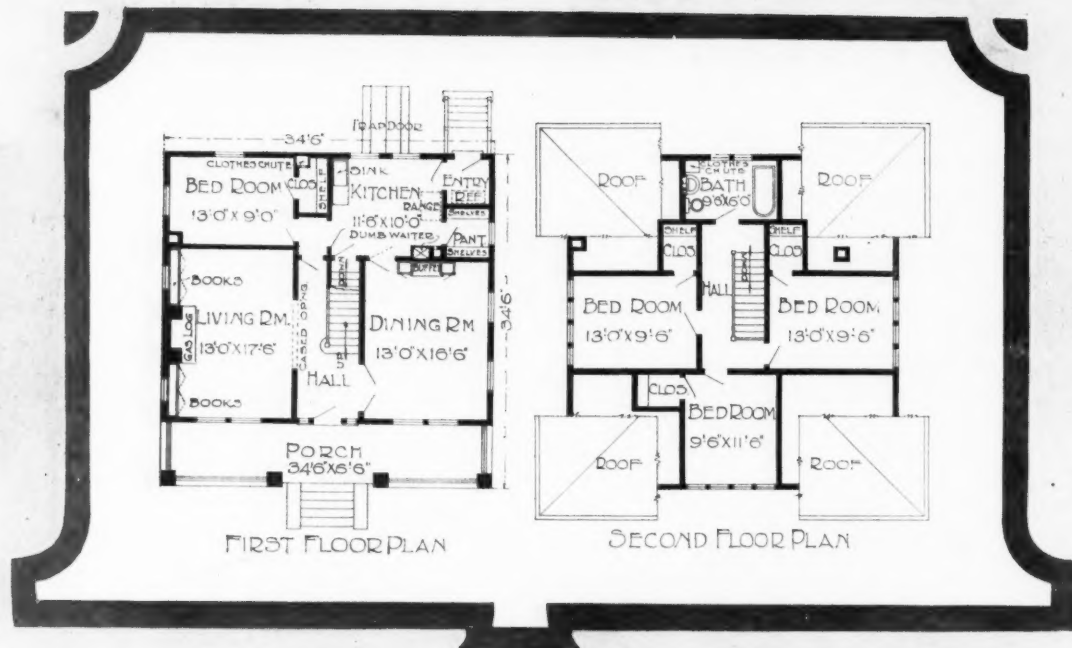
DOUBLE GABLE ROOF RESIDENCE. By a novel treatment of roof details, this house is given a very beautiful exterior appearance. The roof starts at the first floor ceiling level at a very steep pitch and is finally broken up into a double gable. The second floor rooms are full height by the use of dormers extending practically across the entire house. The entire surface of the building above the line of the eaves, is finished with shingles. All of the rooms are well proportioned and well arranged. A special feature is the pleasant screened porch with a balcony above.



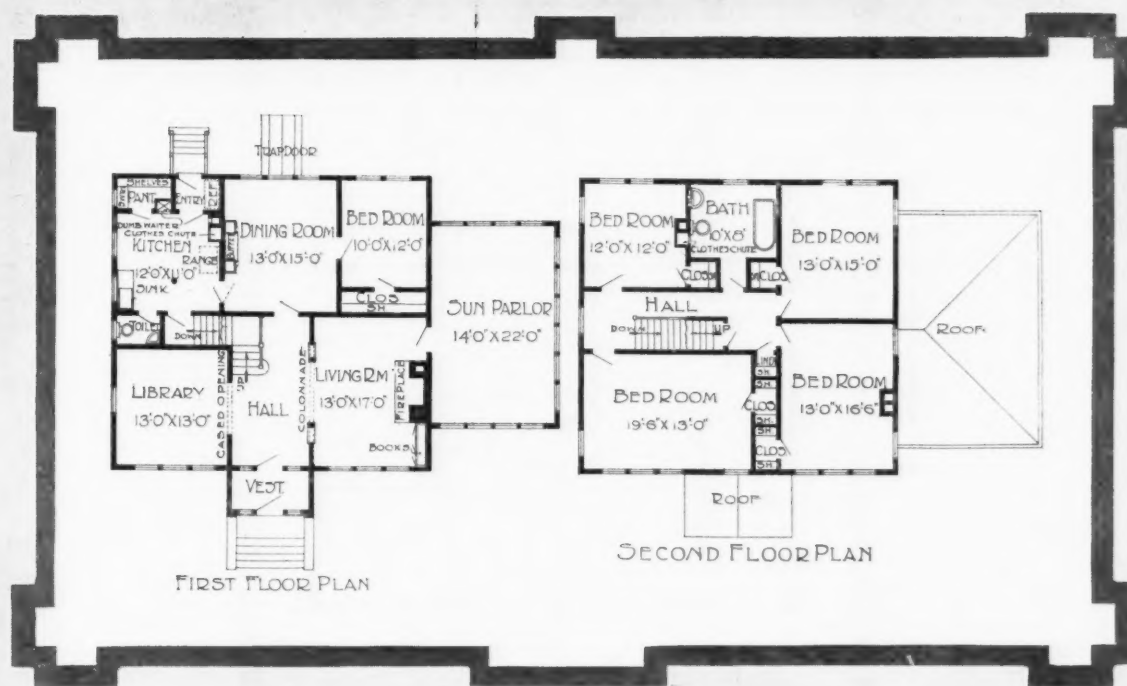
STORY-AND-A-HALF HOUSE OF SHINGLES AND STUCCO. This house is at Manhattan Beach, Long Island, and was designed and erected by Mrs. A. F. Cassidy, Architect and Builder. One of the interesting features of this type of house is that a large living room is easily provided. The arrangement which connects the living room with the dining room definitely, and yet retains the privacy of the latter, is clever in this house. The service part of the house is well arranged. The size is 40 feet by 24 feet, exclusive of the porch.



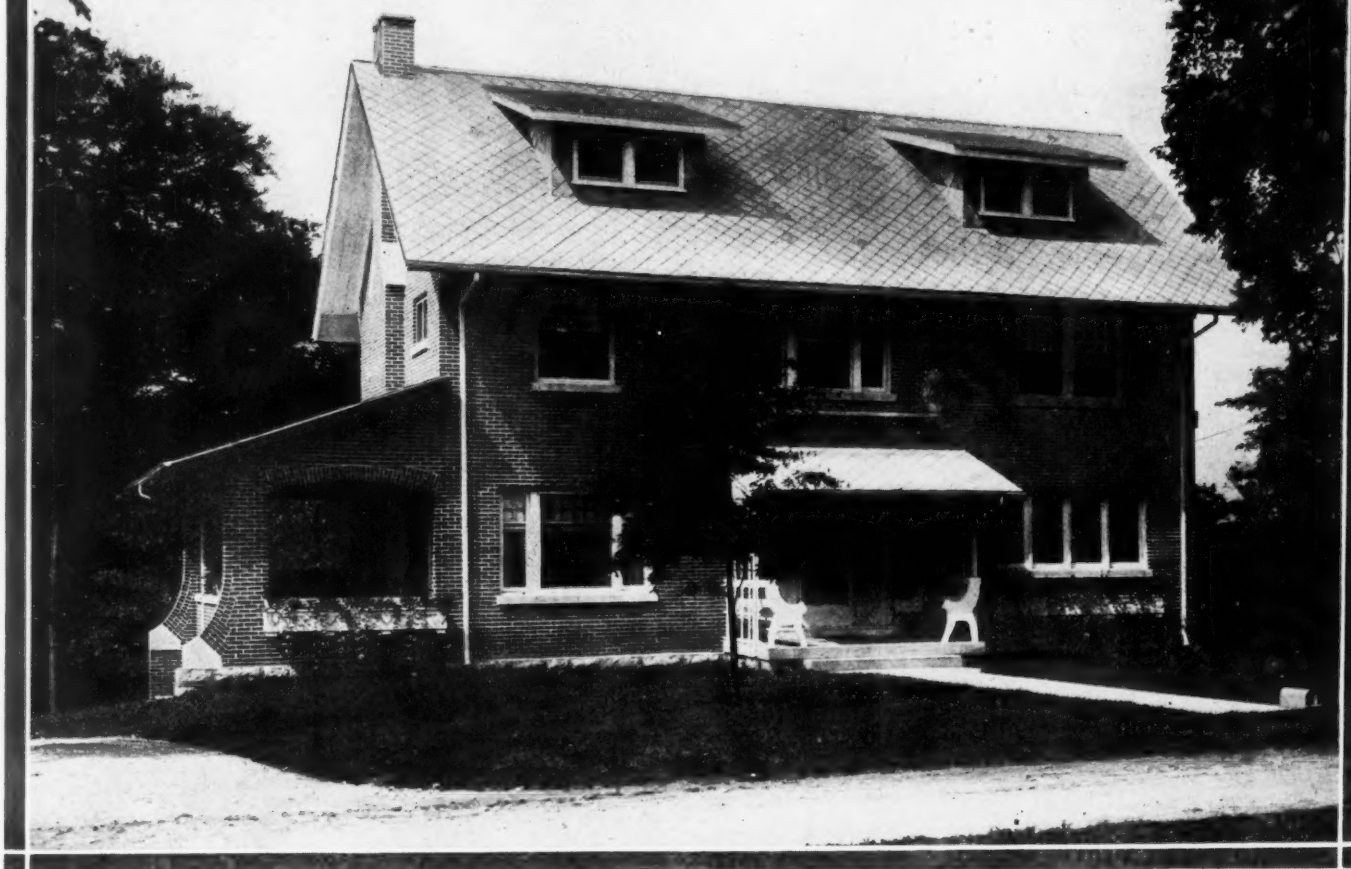
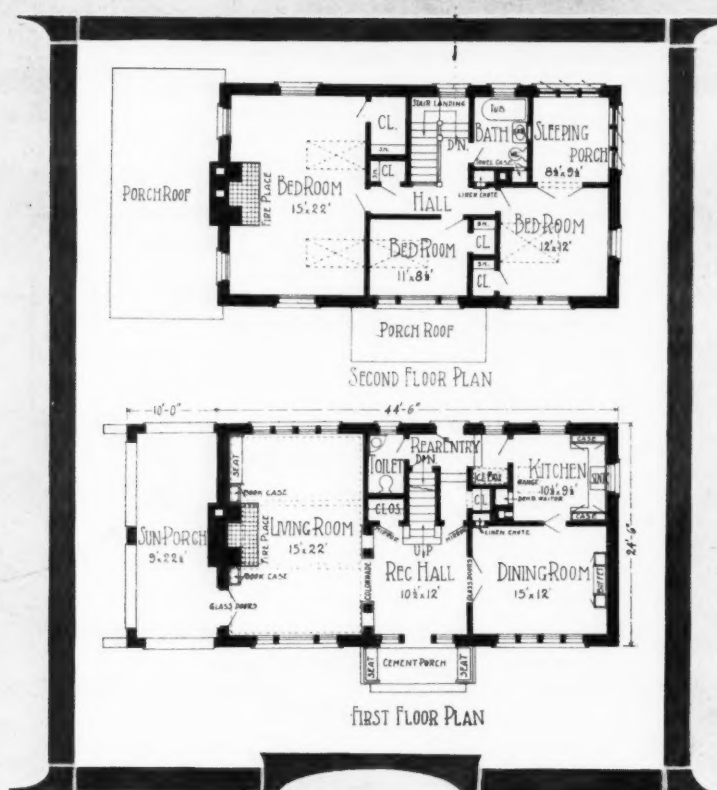
AN ENGLISH BASEMENT HOUSE. This house is an interesting study. It is a type of house which would be desirable at a location where basement excavation is inadvisable. The design provides a full basement above ground. The basement is arranged to provide a reception hall of the type used in modern apartment houses, a large room which might be used as a contractor's or doctor's office, the boiler room, coal room and laundry. The upper floors follow modern high grade residence design in the proportion and arrangement of rooms. The porch and balcony are pleasant features.



STUCCO BUNGALOW OF NEAT DESIGN. The trim lines of this little house are pleasing in every detail. The hip roof gives it the bungalow appearance, but second floor rooms are provided by the use of large dormers, which have the added effect of balancing the design. The first floor rooms are arranged in a convenient manner about the central hall. The arrangement is made handy by grouping the kitchen and dining room together. One bedroom is provided on the first floor and three bedrooms and the bath are located on the second floor.



LARGE STUCCO HOUSE HAVING MODEL ROOM ARRANGEMENT. The exterior of this house is finished with stucco above the first floor window sills, up to which point the face brick basement wall is carried. Study the room arrangement; it leaves little undone in the utilization of the floor space. The kitchen with the adjoining pantry and entry include practically every detail of convenience which might be desired. The large sun parlor stands for comfort. This is a residence at Davenport, Iowa, designed by B. W. Gartside, Architect, and built by W. H. Bargman, Contractor. The plan calls for a building 37 feet by 33 feet 6 inches.



AN EXAMPLE OF SUBSTANTIAL BRICK CONSTRUCTION. The clean-cut appearance of the exterior of this house depends upon sharpness of outline, neat white trim and a bright wall surface. The reception hall is given the appearance of depth by the use of two mirror doors at the back. All rooms are accessible from the hall. The sun porch is large and pleasant. The kitchen follows the best modern designing practice and includes many features of interest to the housewife. A sleeping porch is included in the design. This residence is at Audubon Park, Louisville, Kentucky, and was designed by Henry Walter, Architect.

The "American Builder" Information Exchange

Will Help You With Your Contract Requirements

OUR Information Exchange believes it can render service and save our readers time and money on many of their contracts. We can tell you where to get that unusual item, can place before you full information concerning both standard goods you will need and improved specialties you may want, and can help you to secure prompt deliveries and right prices. Fill in coupon below, pin same to your business letterhead, and we will send all information we think would help you.

We have.....

We are figuring on.....
(cross out one not wanted)

entire contract
heating contract
plumbing contract
lighting contract
painting contract
masonry contract
concrete contract
(cross out those not wanted)

for building checked below and want all data on materials, equipment and specialties we will need.

	SIZE	TO COST ABOUT	Date Work is to Begin or Date Contract is to be Let.
<input type="checkbox"/> Dwelling House (City or Town).....			
<input type="checkbox"/> Farmhouse.....			
<input type="checkbox"/> Apartment House.....			
<input type="checkbox"/> Schoolhouse.....			
<input type="checkbox"/> Church.....			
<input type="checkbox"/> Theatre.....			
<input type="checkbox"/> Library.....			
<input type="checkbox"/> Public Garage.....			
<input type="checkbox"/> Bank Building.....			
<input type="checkbox"/> Hotel.....			
<input type="checkbox"/> Office Building.....			
<input type="checkbox"/> Store Building.....			
<input type="checkbox"/> Factory.....			
<input type="checkbox"/> Warehouse.....			
<input type="checkbox"/> Dairy Barn.....			
<input type="checkbox"/> Hog House.....			
<input type="checkbox"/> Two-Story Granary.....			
<input type="checkbox"/> Other Farm Building (What?).....			
<input type="checkbox"/> Any Other Building (What?).....			

CONSTRUCTION of said building is as checked below:

EXTERIOR WALLS

- ☐ All Frame
- ☐ Stucco
- ☐ Brick Veneer
- ☐ Brick (Solid)
- ☐ Structural Tile
- ☐ Concrete Blocks
- ☐ Monolithic Concrete
- ☐ Stone
- ☐ Glass (Store Fronts)
- ☐ Ornamental Terra Cotta

ROOFING

- ☐ Wood Shingles
- ☐ Asphalt Shingles
- ☐ Asbestos Shingles
- ☐ Metal Tile
- ☐ Clay Tile
- ☐ Slate
- ☐ Composition Roll
- ☐ Built up Tar and Gravel
- ☐ Tin Plate
- ☐ Canvas

SUPPORTING FRAME

- ☐ Stud and Joist
- ☐ Heavy Timber Mill
- ☐ Structural Steel
- ☐ Reinforced Concrete
- ☐ Self Supporting Plank
- ☐ On Concrete Piles
- ☐ Fireproof Floors
- ☐ Fireproof Partitions
- ☐ Metal Lath

INTERIOR FINISH

- ☐ Soft Wood
- ☐ Hardwood
- ☐ Wallboard
- ☐ Marble
- ☐ Metal Ceilings and Walls
- ☐ Metal Doors
- ☐ Metal Windows
- ☐ Metal Trim
- ☐ Metal Grilles, etc.
- ☐ Composition Flooring

SPECIALTIES, FIXTURES AND EQUIPMENT NEEDED

HEATING PLANT

- ☐ Warm Air Furnace
- ☐ Pipeless Furnace
- ☐ Steam, Direct Radiation
- ☐ Steam, Blower System
- ☐ Hot Water System
- ☐ Vapor System

PLUMBING

- Indicate number of Fixtures needed
- Closets.....
- Bathtubs.....
- Shower Baths.....
- Urinals.....
- Lavatories.....
- Kitchen Sinks.....
- Laundry Tubs.....
- Slop Sinks.....
- Drinking Fountains.....
- Chemical Closets.....

WATER SUPPLY—for Country Locations
What Capacity Needed?.....

LIGHTING AND LIGHTING FIXTURES

- Municipal Service {electricity ☐ gas ☐
- Do you desire quotation on Fixtures?....
- Private Lighting Plant to be installed, Electricity.....
- Acetylene.....
- Gasoline.....

ELEVATORS

- Passenger.....
- Freight.....
- Dumb Waiters.....
- Ash Lifts.....

AUTOMATIC SPRINKLER SYSTEM

SCHOOL, CHURCH OR THEATRE EQUIPMENT

- Seats, Pews or Opera Chairs.....
- Blackboards.....
- Library Shelving.....
- Rolling Partitions.....
- Bank Vaults and Safes.....
- Steel Lockers.....

FARM BUILDING EQUIPMENT

- Stanchions for.....cows
- Stock Pens.....
- Stalls for.....horses
- Stock Watering Buckets.....
- Feed and Litter Carriers.....
- Cupola Ventilators.....
- Skylights.....
- Hay Track and Carrier.....
- Barn and Garage Door Hangers.....
- Cup Elevators for Corn and Grain.....
- Lightning Protection.....
- Studding Sockets.....
- Roof Windows.....

BUILDERS' HARDWARE

- Burglar Alarms.....
- Door Checks.....
- Caseament Adjusters.....
- Ventilating Sash Operators.....
- Panic Bolts.....
- Weatherstrips.....
- Coal Chutes.....
- Sidewalk Doors.....
- Prism Lights.....
- Refrigerators, Hotel or Market.....
- Refrigerators, Mechanical.....
- Fire Escapes.....
- Fire Shutters.....

HOUSEHOLD UTILITIES

- Garbage Incinerators.....
- Package Boxes.....
- Disappearing Stairs.....
- Disappearing Beds.....
- Sleeping Porch Sash.....
- Refrigerators, Outside Icing.....
- Vacuum Cleaning System.....
- Clothes Dryer.....

Note Here Any Special Requirements Not Marked Above.

Name.....

Street No. or P. O. Box.....

Town.....

State.....

We {are} acting as Architects as well as Builders on this job.
{are not}

Mail the above to

"AMERICAN BUILDER" INFORMATION EXCHANGE
1827 Prairie Avenue, Chicago

See Other Side for Equipment, Machinery, Tools and Building Materials Needed

The "American Builder" Information Exchange

Data Sheet (Continued)

I desire information regarding the Building Materials, Equipment, Machinery and Tools checked, for which I am now in the market.

BUILDING MATERIALS

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Art Glass | <input type="checkbox"/> Fireproofing | <input type="checkbox"/> Paints, Fire Retardant | <input type="checkbox"/> Sash Pulleys |
| <input type="checkbox"/> Awning Cloth | <input type="checkbox"/> Fireproof Shutters | <input type="checkbox"/> Pipe, Conductor | <input type="checkbox"/> Screen Wire Cloth |
| <input type="checkbox"/> Battens, Metal | <input type="checkbox"/> Flooring, Composition | <input type="checkbox"/> Pipe, Steel | <input type="checkbox"/> Screens, Window and Door |
| <input type="checkbox"/> Beds, Disappearing | <input type="checkbox"/> Flooring, Hardwood | <input type="checkbox"/> Pipe, Warm Air Furnace | <input type="checkbox"/> Sheathing Papers |
| <input type="checkbox"/> Boiler and Pipe Covering | <input type="checkbox"/> Floor Finish | <input type="checkbox"/> Pipe, Vitrified Clay | <input type="checkbox"/> Sheet Metal Work, Galvanized |
| <input type="checkbox"/> Boilers, Heating Plant | <input type="checkbox"/> Floor Hardeners | <input type="checkbox"/> Plaster, Gypsum or Hardwall | <input type="checkbox"/> Shingle Stains |
| <input type="checkbox"/> Bolts, Expansion | <input type="checkbox"/> Floor Hinges | <input type="checkbox"/> Plaster Board | <input type="checkbox"/> Skylights |
| <input type="checkbox"/> Brick, Common | <input type="checkbox"/> Furnaces, Warm Air | <input type="checkbox"/> Plaster Blocks, Partition | <input type="checkbox"/> Slate Blackboards |
| <input type="checkbox"/> Brick, Face | <input type="checkbox"/> Garbage Burners | <input type="checkbox"/> Plate Glass | <input type="checkbox"/> Slate, Structural |
| <input type="checkbox"/> Brick, Fire | <input type="checkbox"/> Garage Door Hardware | <input type="checkbox"/> Plumbing Fixtures | <input type="checkbox"/> Sound Deadeners |
| <input type="checkbox"/> Building Papers | <input type="checkbox"/> Hay Track | <input type="checkbox"/> Prism Lighting | <input type="checkbox"/> Store Front Construction |
| <input type="checkbox"/> Calcimine | <input type="checkbox"/> Heaters, Instantaneous | <input type="checkbox"/> Radiators | <input type="checkbox"/> Structural Steel |
| <input type="checkbox"/> Caulking and Glazing Compound | <input type="checkbox"/> Heaters, Tank | <input type="checkbox"/> Refrigerators, Outside Icing | <input type="checkbox"/> Stucco |
| <input type="checkbox"/> Ceilings, Metal | <input type="checkbox"/> Insulating and Deadening Materials | <input type="checkbox"/> Reinforcing Bars | <input type="checkbox"/> Tanks, Cypress |
| <input type="checkbox"/> Cement, Portland | <input type="checkbox"/> Lighting Fixtures | <input type="checkbox"/> Registers | <input type="checkbox"/> Tanks, Steel |
| <input type="checkbox"/> Coal Chutes | <input type="checkbox"/> Lighting Systems | <input type="checkbox"/> Roofing, built up Tar and Gravel | <input type="checkbox"/> Terra Cotta, Ornamental |
| <input type="checkbox"/> Closets, Chemical | <input type="checkbox"/> Lightning Rods | <input type="checkbox"/> Roofing, Canvas | <input type="checkbox"/> Tile, Clay Structural |
| <input type="checkbox"/> Columns, Porch, etc. | <input type="checkbox"/> Limestone | <input type="checkbox"/> Roofing, Clay Tile | <input type="checkbox"/> Tile, Floor |
| <input type="checkbox"/> Concrete Inserts | <input type="checkbox"/> Linseed Oil | <input type="checkbox"/> Roofing, Ready Roll | <input type="checkbox"/> Varnish |
| <input type="checkbox"/> Creosote | <input type="checkbox"/> Mantels, Wood | <input type="checkbox"/> Roofing, Shingles, Asbestos | <input type="checkbox"/> Ventilators |
| <input type="checkbox"/> Door Track and Hangers | <input type="checkbox"/> Metal Columns | <input type="checkbox"/> Roofing, Shingles, Asphalt | <input type="checkbox"/> Wallboard |
| <input type="checkbox"/> Doors, Hardwood Veneer | <input type="checkbox"/> Metal Lath | <input type="checkbox"/> Roofing, Shingles, Metal | <input type="checkbox"/> Wall Ties |
| <input type="checkbox"/> Doors, Fire-Resisting | <input type="checkbox"/> Metal Lumber | <input type="checkbox"/> Roofing, Shingles, Wood | <input type="checkbox"/> Waterproofing |
| <input type="checkbox"/> Dumb Waiters | <input type="checkbox"/> Mortar Colors | <input type="checkbox"/> Roofing, Slate | <input type="checkbox"/> Water Supply Plants |
| <input type="checkbox"/> Elevating Machinery, Granary | <input type="checkbox"/> Nails, Cut Iron | <input type="checkbox"/> Roofing, Tin | <input type="checkbox"/> Windows, Casement |
| <input type="checkbox"/> Enamel, White | <input type="checkbox"/> Nails, Galvanized | <input type="checkbox"/> Safety Treads | <input type="checkbox"/> Windows, Reversible |
| <input type="checkbox"/> Fireplace Fixtures | <input type="checkbox"/> Paints | <input type="checkbox"/> Sash, Steel | <input type="checkbox"/> Wire Glass |
| | | | <input type="checkbox"/> Wood Dye |

CONTRACTORS' EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> Air Compressors | <input type="checkbox"/> Chutes, Concrete | <input type="checkbox"/> Gravel Washing Plants | <input type="checkbox"/> Saw Rigs |
| <input type="checkbox"/> Back Fillers | <input type="checkbox"/> Column Clamps | <input type="checkbox"/> Hoists, Electric | <input type="checkbox"/> Scaffold Brackets |
| <input type="checkbox"/> Bar Benders | <input type="checkbox"/> Concrete Tampers | <input type="checkbox"/> Hoists, Gasoline or Steam | <input type="checkbox"/> Scrapers |
| <input type="checkbox"/> Blocks and Tackle | <input type="checkbox"/> Contractors' Lights | <input type="checkbox"/> House Moving Trucks | <input type="checkbox"/> Screens, Sand and Grave |
| <input type="checkbox"/> Buckets, Dredging and Excavating | <input type="checkbox"/> Cranes, Locomotive | <input type="checkbox"/> Jacks | <input type="checkbox"/> Shovels, Steam |
| <input type="checkbox"/> Cableways | <input type="checkbox"/> Crushers and Pulverizers | <input type="checkbox"/> Ladders | <input type="checkbox"/> Sidewalk Forms |
| <input type="checkbox"/> Cars, Dumping and Industrial | <input type="checkbox"/> Derricks | <input type="checkbox"/> Loaders, Wagon | <input type="checkbox"/> Tractors |
| <input type="checkbox"/> Carts, Concrete | <input type="checkbox"/> Drills | <input type="checkbox"/> Mixers, Cement and Concrete | <input type="checkbox"/> Trailers, Automobile or Truck |
| <input type="checkbox"/> Cement Block Machines | <input type="checkbox"/> Engines, Gas | <input type="checkbox"/> Mixers, Mortar | <input type="checkbox"/> Transits and Levels |
| <input type="checkbox"/> Cement Ornamental Molds | <input type="checkbox"/> Engines, Steam | <input type="checkbox"/> Motor Trucks | <input type="checkbox"/> Typewriters |
| <input type="checkbox"/> Cement Tile Machines | <input type="checkbox"/> Floor Scrapers | <input type="checkbox"/> Pile Driving Machinery | <input type="checkbox"/> Wagons, Dumping |
| | <input type="checkbox"/> Floor Surfacers, Electric | <input type="checkbox"/> Pumps, Contractors' | <input type="checkbox"/> Wheelbarrows |
| | <input type="checkbox"/> Forms, Steel, for Concrete | <input type="checkbox"/> Salamanders | |

POWER SHOP EQUIPMENT

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> Hand and Foot Power Machines | <input type="checkbox"/> Dry Kiln | <input type="checkbox"/> Grinders | <input type="checkbox"/> Sanders |
| <input type="checkbox"/> Electric Motors | <input type="checkbox"/> Dust Collecting System | <input type="checkbox"/> Jointers | <input type="checkbox"/> Sash Trimmers |
| <input type="checkbox"/> Gas Engines | <input type="checkbox"/> Band Saws | <input type="checkbox"/> Lathes | <input type="checkbox"/> Shapers |
| <input type="checkbox"/> Safety Guards | <input type="checkbox"/> Borers | <input type="checkbox"/> Mortisers | <input type="checkbox"/> Tenoners |
| <input type="checkbox"/> Shop Trucks | <input type="checkbox"/> Saw Tables | <input type="checkbox"/> Moulders | <input type="checkbox"/> Rubbing Machines |
| <input type="checkbox"/> Pulleys | <input type="checkbox"/> Swing Cut Off Saws | <input type="checkbox"/> Planers | <input type="checkbox"/> Cutter Heads |
| <input type="checkbox"/> Glue Pots and Clamps | <input type="checkbox"/> Saw Rigs | <input type="checkbox"/> Bench Planers | <input type="checkbox"/> Machine Knives |
| | <input type="checkbox"/> Combination Woodworker | | |

MECHANICS' TOOLS

- | | | | |
|--|--------------------------------------|---|---|
| <input type="checkbox"/> Augur and Bits | <input type="checkbox"/> Gauges | <input type="checkbox"/> Mortisers, Lock | <input type="checkbox"/> Sharpening Stones |
| <input type="checkbox"/> Braces | <input type="checkbox"/> Gimlets | <input type="checkbox"/> Planes | <input type="checkbox"/> Shingle Nailers, Automatic |
| <input type="checkbox"/> Cement Workers' Tools | <input type="checkbox"/> Grinders | <input type="checkbox"/> Pliers | <input type="checkbox"/> Shovels |
| <input type="checkbox"/> Chests, Tool | <input type="checkbox"/> Hammers | <input type="checkbox"/> Plumbs | <input type="checkbox"/> Squares |
| <input type="checkbox"/> Chisels | <input type="checkbox"/> Hatchets | <input type="checkbox"/> Rules | <input type="checkbox"/> Tape Lines |
| <input type="checkbox"/> Clamps | <input type="checkbox"/> Lanterns | <input type="checkbox"/> Saws | <input type="checkbox"/> Trowels |
| <input type="checkbox"/> Compasses | <input type="checkbox"/> Levels | <input type="checkbox"/> Saw Sharpening Tools | <input type="checkbox"/> Vises |
| <input type="checkbox"/> Files | <input type="checkbox"/> Mitre Boxes | <input type="checkbox"/> Screw Drivers | <input type="checkbox"/> Wrenches. |

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Noon Hour Talks by the Boss Carpenter

Talk No. 62—Farm Series No. 3—Figuring a Permanent Hog House

THE BOSS TELLS ABOUT THE CONSTRUCTION OF A MODERN HOG HOUSE AND SHOWS HOW TO FIND THE SIZES OF MATERIAL TO USE

"IN designing buildings such as hog houses," said the Boss, "we do not find the difficulty of providing framing to resist pressure as we did in the grain storage building, unless there are parts of the structure that are used for feed storage purposes. The loads to be taken care of are those from the roof only since the floor is constructed directly on the ground and does not require joists in the modern houses. The roof loads will be due to wind and snow only and will vary in different parts of the country. The matter of floor, roof and wall construction, together with interior partitions and similar details, will be considered as a part of our talk.

"A really serviceable hog house is one that can be

used to a good advantage every day of the year, and therefore should be built in a rather substantial manner. Small portable houses are simply and easily made but do not fill the purpose of the permanent type such as shown in Fig. 3A. This form of house may be constructed entirely of wood or may be of a combination of wood and concrete. That is, it may have the walls partly or wholly of concrete, as shown in Fig. 3A, with all other parts of the structure except the floor made of ordinary frame construction. A building of frame construction thruout is cheaper and answers all purposes.

"A good hog house should be warm in winter, cool in summer and not subject to

(Continued to page 130.)

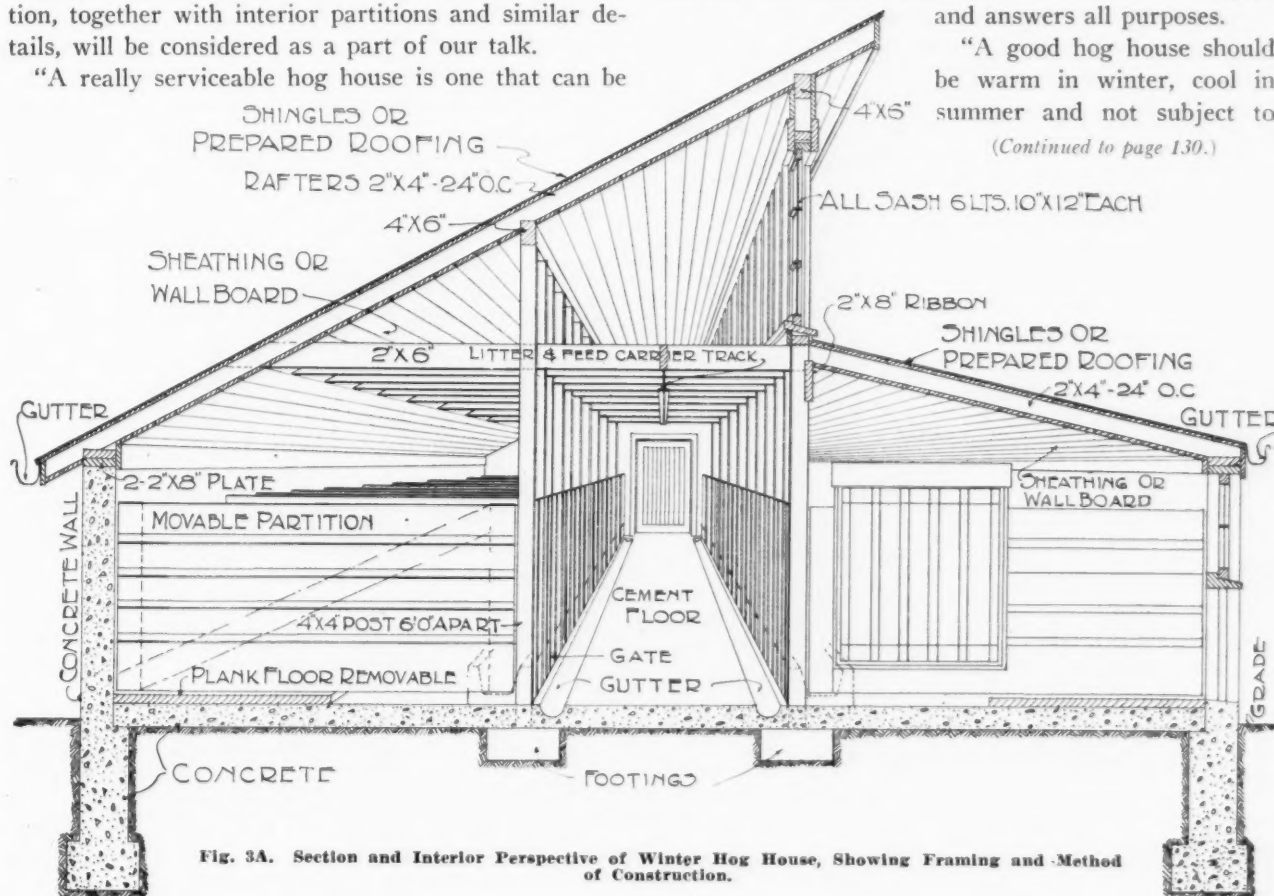
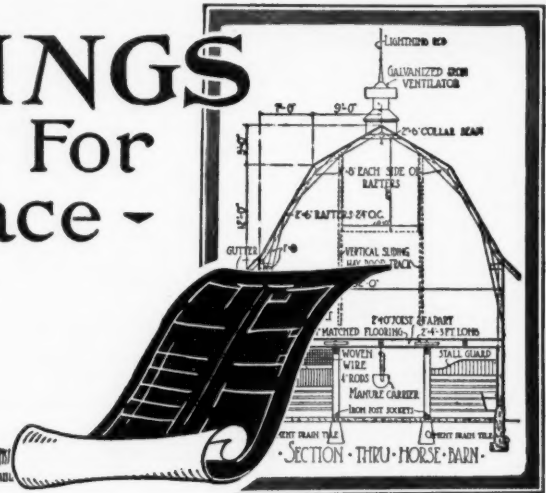
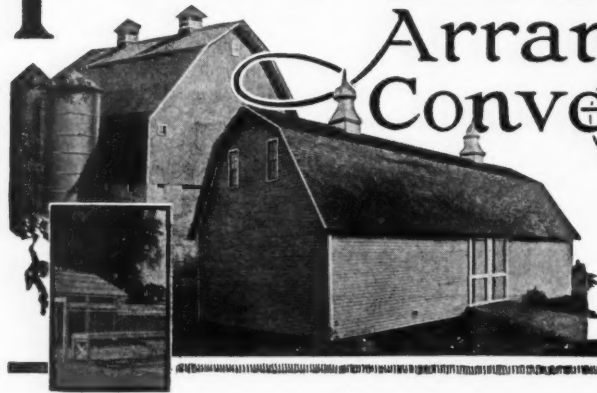


Fig. 3A. Section and Interior Perspective of Winter Hog House, Showing Framing and Method of Construction.

FARM BUILDINGS

Arranged For Convenience -



Six Well-Planned Farm Buildings

A GROUP OF EXCELLENT FARM BUILDINGS INCLUDING A NOVEL DAIRY BARN, ONE-STORY GRAIN HOUSE, LARGE DAIRY BARN AND HORSE STABLE, CONCRETE BLOCK WINTER HOG HOUSE, SMALL COMBINATION BARN AND CURTAIN FRONT POULTRY HOUSE

THE dairy barn shown in the photographic perspective view below is an adaptation of the dairy barn built on one of the large estates in the farming district northwest of Chicago, Illinois. The design furnishes accommodation for 29 cows in single stalls and provides a bull pen and a calf pen in a building 30 feet wide and 66 feet long. The

plan is divided into two parts with a cross-alley at the center, at one end of which the silo is built. Distribution of silage to the stalls is accomplished by the use of a feed carrier system, the track of which is suspended across the transverse alley and equipped with a switch at either end which connects it with the tracks along the feed alleys.

Litter is removed by means of a litter carrier system, the track of which extends along the entire length of the barn, in the center alley, and out of the barn at one end where it may be loaded directly into the spreader or piled for subsequent use.

Along one side of the transverse alley there are two feed bins opening



An Interesting Dairy Barn Modeled After a Barn on One of the Large Farms in the Wisconsin Farming District Northwest of Chicago.

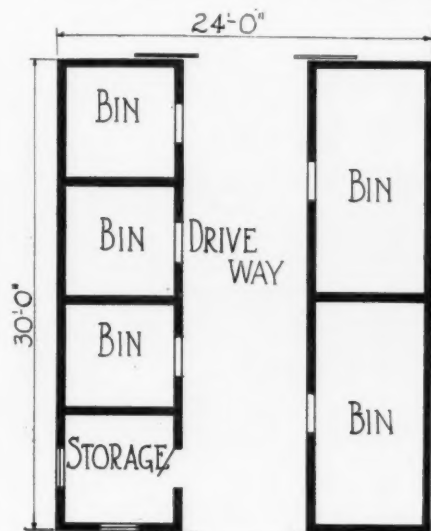
on to the feed alleys. This arrangement, it will be noticed, centers the supply of feed and facilitates the establishing of a feeding plan which will eliminate all wasted energy. The arrangement places the cows facing out. The preference, relative to this point, is divided among different farmers, some preferring the arrangement which faces the cows in and others favoring that used in this design. From the standpoint of sanitation, it certainly seems an advantage to keep all of the litter in one central alley, away from the walls of the building. The gutters flanking the litter alley are sloped toward the center of the barn and a drain is placed at the inner end of each gutter. Where running water under normal pressure is available, it is the work of a few minutes to thoroly clean out the stable.

One of the interesting features of this barn is the roof construction. Altho the plan shows a practically symmetrical arrangement of the two parts of the stable, the superstructure of the building is different in these two parts. Above the right-hand part of the stable, as it is shown in the accompanying plan, there is a hay mow for the storage of timothy or alfalfa hay. This mow is covered with a gambrel roof having its peak at right angles to the length of the barn. Above the other part of the stable there is a smaller storage space for straw covered with an ordinary gable roof having its peak in line with the length of the barn. Such a scheme applies when it is not necessary to have a large mow space.

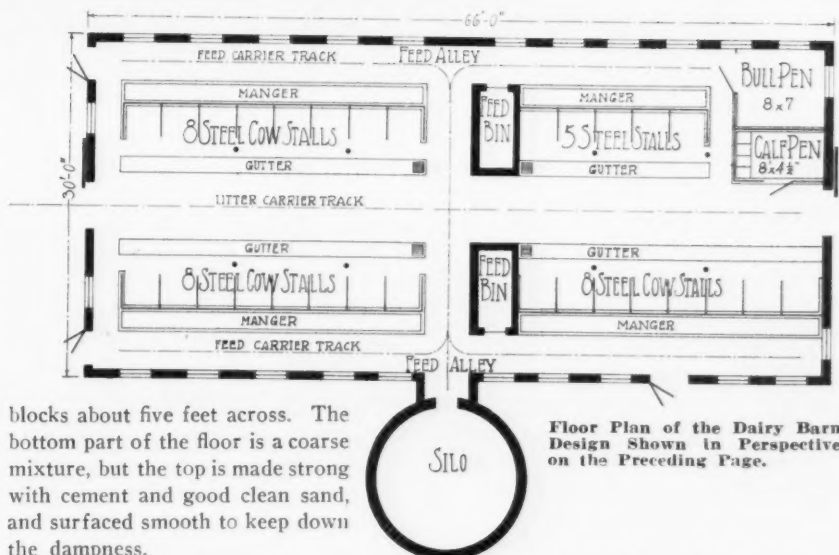
One-Story Grain House

A farm grain house, 24 by 30 feet in size, is shown in the accompanying design.

This grain house has a foundation of concrete with a solid concrete floor, which is built the same as a sidewalk in



Floor Plan of One-Story Grain House.



Floor Plan of the Dairy Barn Design Shown in Perspective on the Preceding Page.

blocks about five feet across. The bottom part of the floor is a coarse mixture, but the top is made strong with cement and good clean sand, and surfaced smooth to keep down the dampness.

The plan calls for a driveway thru the center with two large bins on one side of the driveway and four smaller bins on the opposite side. One of these smaller bins is lighted by two windows. Also a hinged door is provided so that the room may be used for the storage of grain sacks or any other commodity in connection with the grain house.

One farmer uses this room to store the fanning mill when not in use. He also has a heavy table with a plank top placed in front of the window, which he uses for a work table for the repair of sacks. He also has a wide shelf over the window, where he keeps sieves and other articles belonging to the fanning mill. When in use the fanning mill is taken out into the driveway.

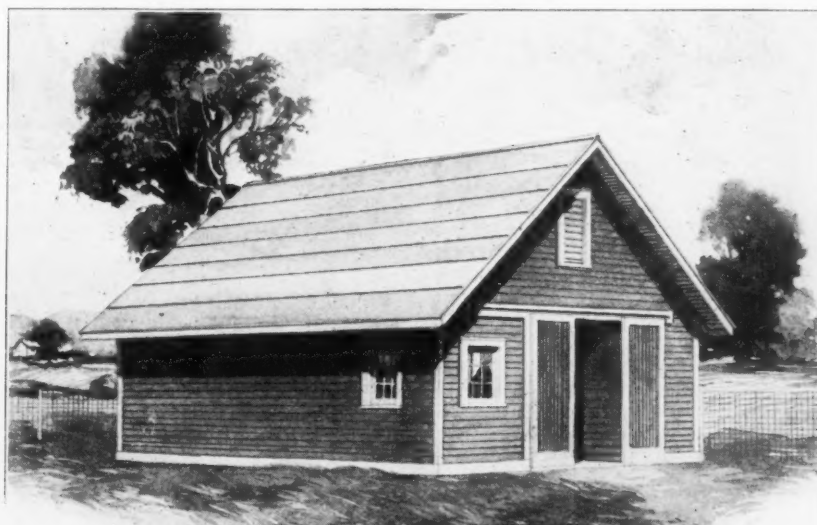
This driveway extends thru the building from west to east; as the prevailing winds come from the west, the tail of

the mill is turned toward the east, so the men are working in an atmosphere free from dust.

The partitions of the bins extend up to within a few feet of the rafters. At threshing time the grain sometimes piles up clear to the top of the bins. It is taken out at the bottom by scoop shovel thru a chute, built on the hopper feeder plan so the grain cannot run out into the main driveway, but it runs down as fast as the shovel lifts it out.

Such a grain house offers facilities for selling clean grain at a higher price. Some farmers go further and separate the grain very carefully into two grades besides the tailings. The best grade is then sold at a higher price for seed.

Grain houses like this one are wanted on the smaller farms where it seems hardly necessary to put in elevating machinery.



One-Story Grain House With Driveway Thru the Middle. Size 24 x 30 Feet.

Large Dairy Barn and Horse Stable

The building shown below represents an excellent type of construction for the man who has about 50 dairy cows which he wishes to feed principally on silage. The building provides considerable stable space, but the central part, only, is built for the storage of hay. This design provides single stalls for 52 cows in the two wings and extending into the central structure at one end, while one-half of the central part of the barn is arranged as a horse stable, entirely separated from the dairy stable except for the double doors in the passageway.

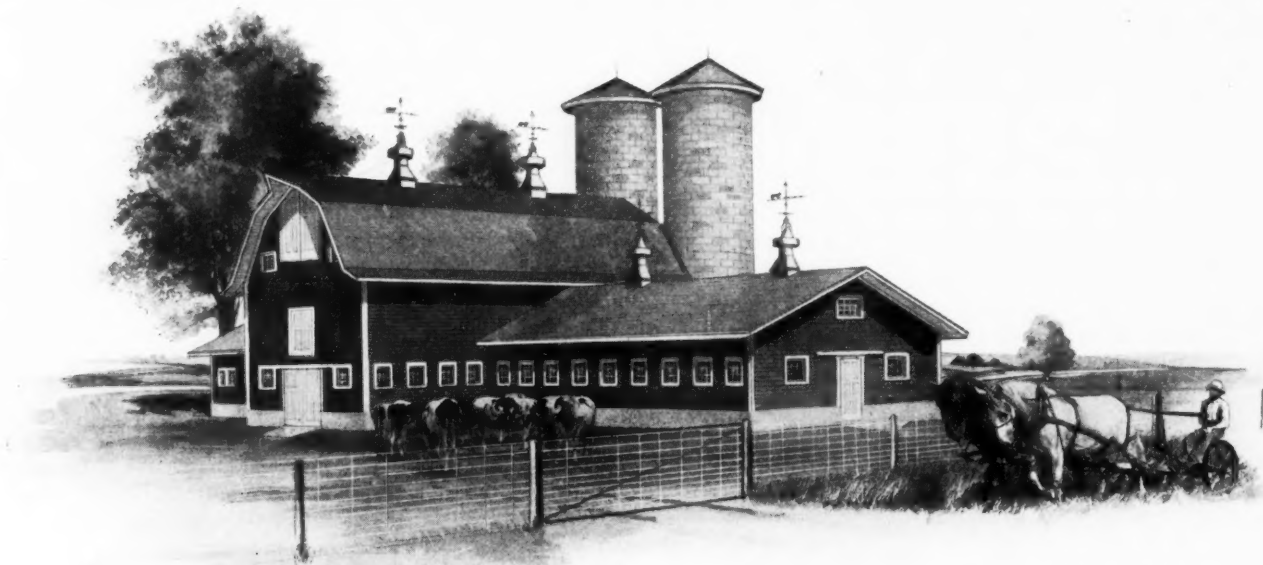
The wings are 36 feet wide and extend out from the main structure 50 feet. The horse stable is 32 feet wide, which gives the building a dimension, from one end of the wing to the other, of 132 feet. The length of the main structure is 56 feet. The wings are built with a trussed gable roof, each set of rafters forming a truss. The ceiling is flat, supported by the bottom cords of the roof trusses. The main barn is plank frame construction thruout, which gives the largest possible hay mow volume for the material used in the construction of the roof.

The equipment of the barn consists of a system of feed and litter carriers in all parts of the building and an adequate system of ventilation.

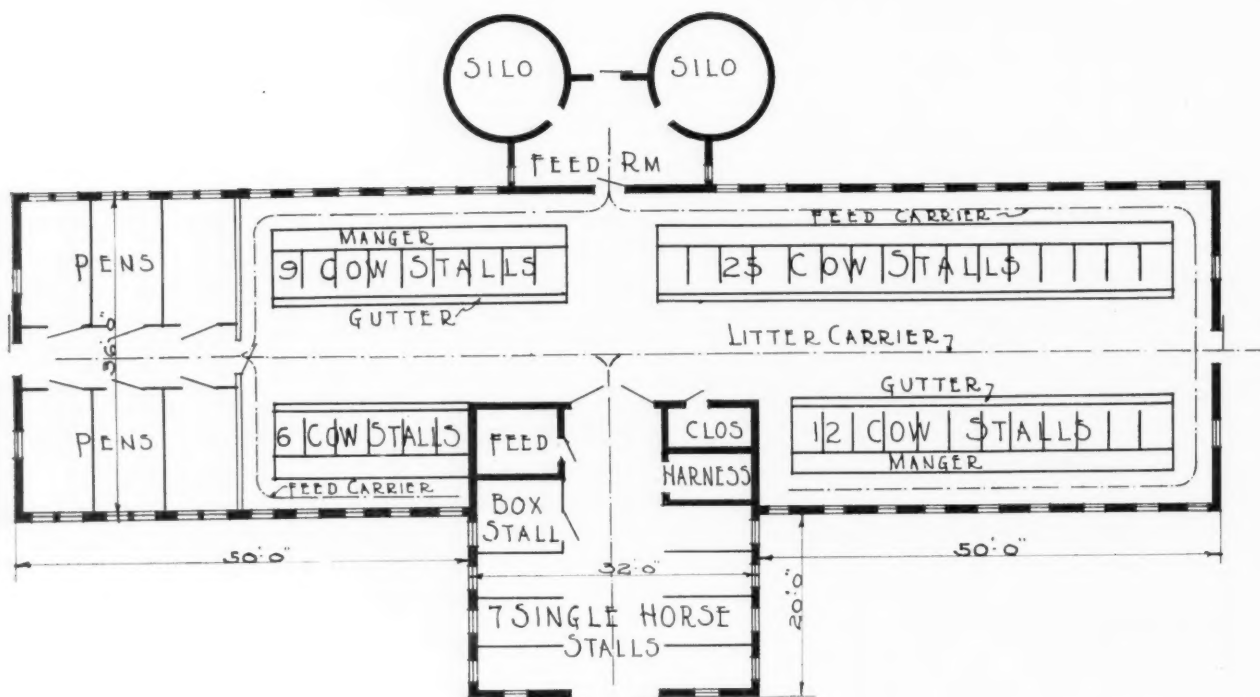
Sanitary stalls and stanchions are called for, in keeping with the high grade construction and equipment used thruout.

There are a large number of windows so that plenty of sunlight will be admitted to assist in the maintenance of healthful conditions.

Since the floors are of concrete everywhere except directly under the animals, the stables are easily kept clean.



Perspective View of Large Dairy Barn and Horse Stable.



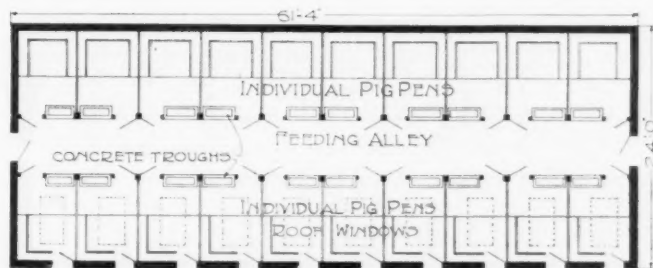
Plan Showing Arrangement of the Above Barn. In accordance with correct design and the rulings of several states, the horse stable is separated from the dairy cow stable. Modern equipment is indicated thruout on the plan.



Excellent Winter Hog House Design of Concrete Blocks With Roof Windows and an Efficient System of Ventilation.

Concrete Block Winter Hog House

This winter hog house is an example of high grade modern construction. The walls are of concrete blocks and a concrete floor is used. Large sized roof windows admit an abundance of sunlight into the 20 pens. Two full sized ventilators are mounted on the roof to keep the air pure at all times. The individual pens are equipped with guards to protect the small pigs and concrete troughs are placed in each pen.



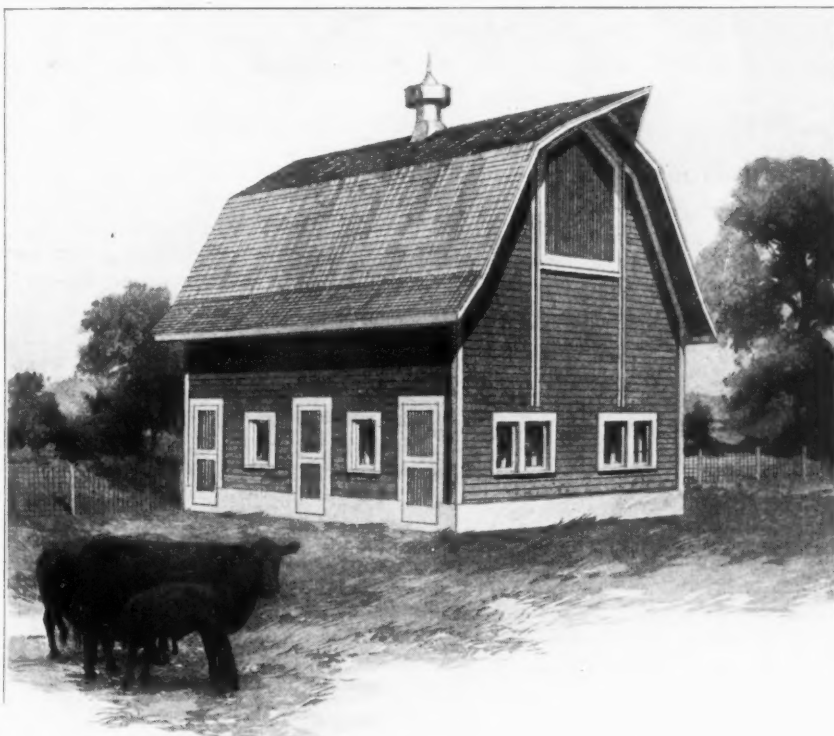
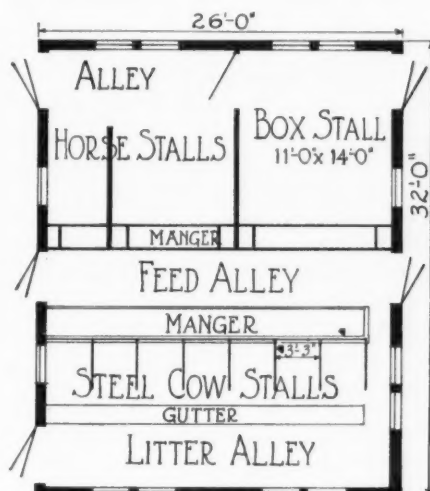
Floor Plan of Hog House Shown Above.

Small Combination Barn

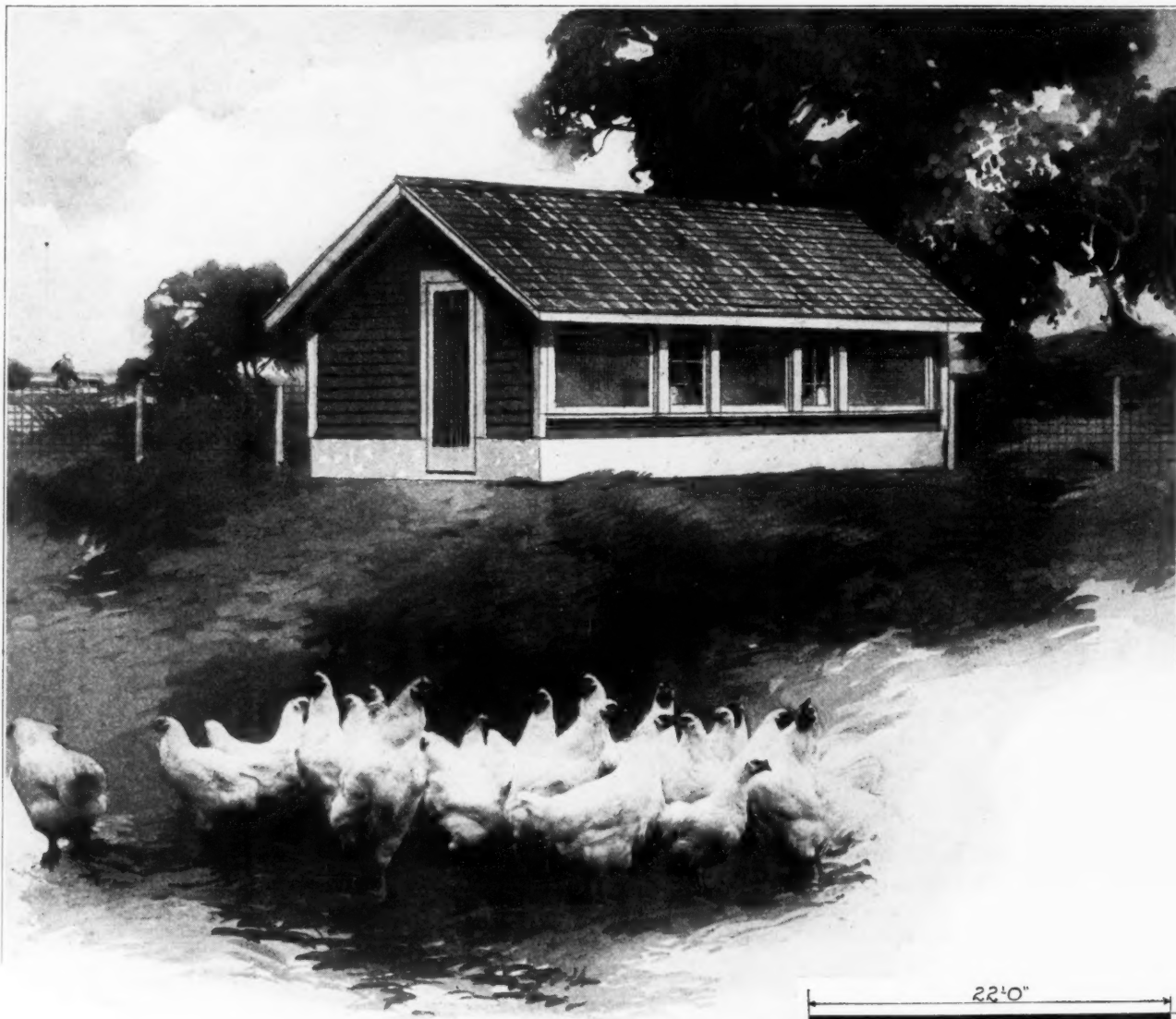
The man who wishes a small capacity barn for housing both horses and cows will be interested in the design shown here. There is a good sized mow over the stable. The hay door is of the counter-balanced, vertical sliding type. The roof is framed after the plank frame construction type, each set of rafters being a truss.

Altho the barn is only 26 feet by 32 feet, the structural details are carefully worked out. The sills are set in cement mortar above the foundation walls, which extend above grade 18 inches. The mow floor joists securely tie the

walls of the building together, insuring rigidity and strength.



Medium Sized Gambrel Roof Barn to Accommodate Seven Cows and Two Teams of Horses



Curtain Front Poultry House Containing Two Rooms. Size 22 by 12 Feet.

Curtain Front Poultry House

A very popular farm poultry house that offers many advantages is shown in this design. The concrete foundation extends up above the grade line about two feet. Commencing at the top of this concrete wall the sills are embedded into soft cement mortar. There are bolts in the concrete wall which extend up four inches to pass thru a double 2 by 4 sill and leave room to screw on the nuts, so the sills are held firmly to the wall.

Cement mortar is then worked around the sill both inside and outside. This is done to prevent the wind from blowing thru between the top of the wall and the bottom of the wooden sill. This is a weak spot in a good many poultry houses that have concrete foundations. All dimension stuff in such buildings is likely to shrink.

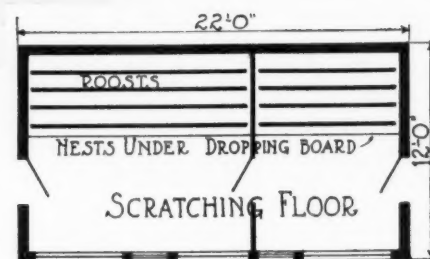
A draught thru a crack in the wall or floor of a poultry house is almost

certain to make trouble. Poultry in confinement require plenty of fresh air, but draughts are often fatal. Hence, the necessity of using great care in starting the wooden superstructure on top of a concrete foundation.

The sides and wall and ceiling of this little poultry house are built in the usual way by using building paper and matched narrow ceiling boards, blind nailed to the studding. This finish should extend all around the sides and ceiling except where the openings come for the doors and windows.

A special feature of this poultry house is the large surface given to what is commonly termed "curtain front," which means that the openings are covered with material thin enough to let in plenty of air without a draught.

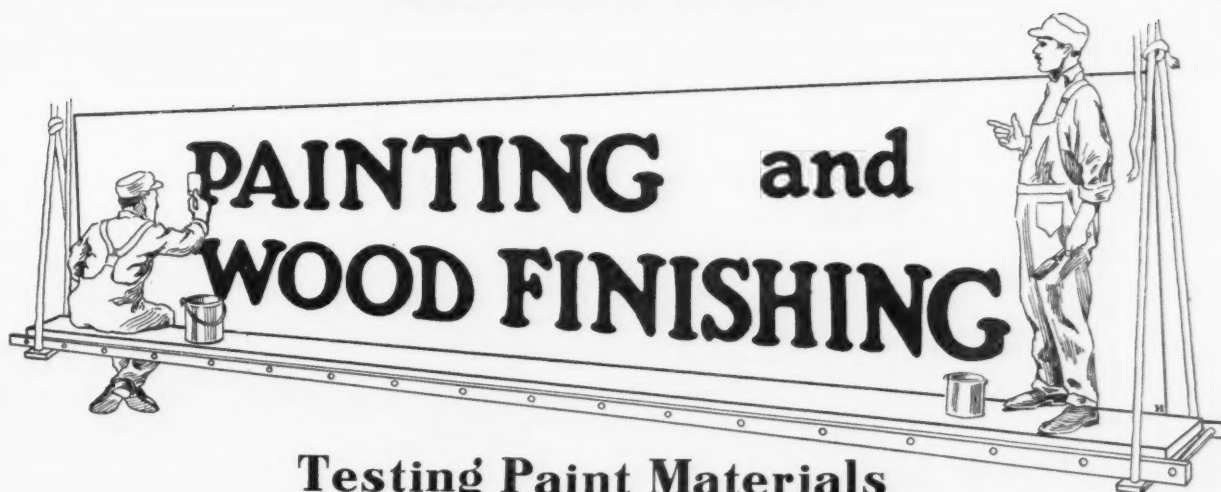
In this plan ten-cent cotton, called muslin in some parts of the country, is stretched over light frames and tacked to hold it in place. These light frames



Floor Plan of Poultry House.

are rabbeted into large and heavier frames that fit against the jambs in the opening and are fastened in place by stops in such a way as to prevent the wind blowing thru the joint between the curtain frames and the framework around the openings. This double frame arrangement is to facilitate changing the muslin when it gets dirty.

When a poultry house is crowded with laying hens this amount of curtain front often is warm enough in cold weather, because there is no draught and the air changes slowly but steadily. The body heat of the fowls is sufficient to warm the air that comes in thru the muslin and keep the house comfortable.



Testing Paint Materials

MARKET CONDITIONS AT THE PRESENT TIME OFFER SPECIAL TEMPTATIONS TO THE ADULTERATION SWINDLERS—HOW TO BE ON GUARD

By Ralph G. Waring

Specification Engineer

NOTE: This is the fourth of a series of articles by Mr. Waring. The fifth will appear in an early issue.

WITH the supply market badly demoralized at the present time, many manufacturers are being forced to use inferior and substitute materials in their products in order to satisfy the quantity demanded by the trade. Extreme costs also encourage many dealers to change materials to lower grades when the barrels reach their warehouses. A case this week dealt with a dealer who opened pure boiled linseed oil, extracted five gallons, substituted benzine, and left the manufacturer's label and guarantee intact.

Being warned of such conditions, therefore, it behooves the careful and conscientious contractor to protect his own name and work. So far as practicable, goods should be bought as *pure* from recognized reputable firms. I shall be glad to send the list of manufacturers whose goods I have bought on the open market and analyzed within recent months. In case it is hard to get materials from well-known firms, the contractor must then have recourse to such tests as I will incorporate in this article; in case of further doubt samples will be analyzed if sent to this office, remembering, please, that our time is as valuable as your own and that while our complete service is yours, yet do not send samples out of mere curiosity.

Equipment for Simple Testing

For this work of testing by the contractor, the apparatus necessary is neither expensive nor extensive, remembering, however, that the results which occur are merely qualitative and not absolute. A dozen each of test tubes $\frac{3}{8}$ inch and $\frac{3}{4}$ inch in diameter; test tube brush; 8-ounce bottle of concentrated acetic acid; pound bottle of pure Aniline oil; pound of benzol, 160°; blow pipe; 4 by 8-inch window glass, which should be varnished black on one side; medicine dropper; one-half pound of powdered litharge; one special pencil for marking on glass.

Tests for Pure Linseed Oil

Linseed oil, as used in practically all paint work, should be pure raw oil for reasons explained in the preceding article. Avoid all boiled oil at present time. High grade pure raw linseed oil should be a medium amber color; perfectly clear as indicating that it is well settled and free from foots; have a pleasant, nutty oil taste without any bitter and nauseating taste on the rear portion of the tongue and palate. This acrid taste is the easiest way of testing for rosin oil, or mineral oil adulterant. A positive test is shown by taking one of the small test tubes, pouring in a portion of the linseed oil to be tested and then carefully adding an equal volume of pure aniline oil. The test tube should be corked or covered with the thumb and shaken. If any mineral or rosin oil adulterant is present, this amount will very soon settle out as a separate layer upon letting the test tube stand for an hour and will very closely approximate the adulteration present. Condemn any oil showing so little as 5 per cent adulteration, as it is very apt to be mineral oil, non-drying and very injurious to your paint film. To test for fish oil, now being used, heat a small portion in test tube and smell the vapor given off; either rosin or fish oil will immediately give evidence of its presence by its characteristic odor. By flowing a small stream of the sample oil across the glass side of one of the black 4 by 8-inch pieces the appearance of a bluish bloom or haze near the edges of the oil will indicate the presence of a mineral oil adulterant.

Testing Linseed for Rosin Driers

To test linseed for cheap rosin driers, such as are being added at this time, make up a paste with the oil and moisture free litharge. If the oil is high grade, the paste will not harden inside of twenty-four or forty-eight hours. If such previous hardening

(Continued to page 144.)

OUT ON THE JOB

What Builders *are* Finding Good



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or

seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Tractor-Semi-Trailer a Solution to Commercial Traffic Problem

A statement recently prepared by Lieutenant-Colonel Chauncey B. Baker, of the Quartermaster Corps, United States Army, and distributed to the railroads of the country by the Special Committee on National Defense of the American Railway Association, says that to move one field army of 80,000 men requires a total of 6,229 cars—passenger, baggage, box, stock and flat cars—made up in 366 trains, with as many locomotives. When it becomes a matter of moving

car space by loading all cars to maximum capacity—some new means of transportation, especially for short hauls, must be found.

A most logical method of relieving the situation is the employment of the tractor-semi-trailer system of hauling.

Any motor truck equipped with a rocking fifth wheel can haul on a semi-trailer two or three times its rated carrying capacity without overtaxing the mechanism of the truck. The time saved in transportation and enormously increased efficiency of the truck more than make up for the slightly higher cost. Furthermore, the orders saved thru the ability to make prompt and sure delivery soon pay for the initial cost of any new equipment that is required.

The adoption of this method of transportation will help the Government, help relieve freight congestion and expedite long distance shipments and make business more nearly "as usual."



Tractor Semi-Trailer Equipped for Hauling Heavy Loads of Lumber and Mill Work.

an army of 500,000 or 1,000,000 men, just imagine the equipment that will be required!

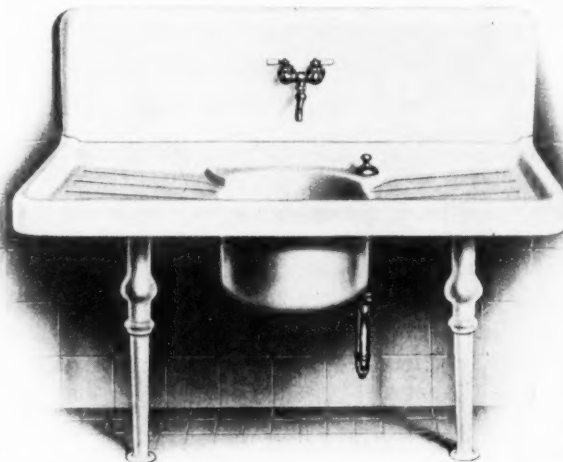
The above figures are for the army alone—the men, animals, vehicles and guns. When you begin also to move the ammunition and food supplies for the army think how much the requirement for railroad equipment mounts up!

Naturally, Government business will have the right of way and commercial traffic will be held up. For some time business has been growling about freight congestion. When the armies begin to move—or better still, *before* they begin to move—business must find some effectual means to relieve the situation, if business is to continue as nearly normal as possible.

It will not be enough for commercial houses to anticipate their needs and buy their supplies as far in advance as possible; it will not be enough for them to avoid wasting

Sink with Built-in Dishpan

A new kitchen convenience that will appeal to every woman is a sink with a built-in dishpan, which makes entirely unnecessary a dishpan for washing dishes. The sink is made in



Sink Having an Integral Dishpan Placed at the Center. The Outfit Is Also Made with the Dishpan at One Side of the Center.

two forms; one has the dishpan at the middle and the other at one end. In either case the sides slope so that the water drains off thoroly when dishes or other materials are placed on the sloping surface. The water is drained from the sink thru an outlet at the bottom of the dishpan portion; the valve control for controlling the flow is placed at the top so the hands need not be placed in the water to open the outlet. The sink is made of the very best material and is handsomely finished.

FRED TELFORD.



Hollow Chisel Electric Mortiser

Every woodworking shop must have facilities for mortising and boring. Whether this is done by hand or by machine is determined by how much of it there is to do. If speed and accuracy are essential, a hollow-chisel electric mortiser and

multiple speed boring machine of the type shown in the accompanying illustration will serve an urgent need.

The bit shaft of this machine is driven by a friction pulley from the disk, which is directly connected to a heavy-duty, constant - service horizontal motor. Any speed of the bit shaft may be obtained up to 3750 R.P.M. The machine will successfully handle hollow chisels up to 3/4-inch and regular boring augers up to 1 1/4 inches. By the use of special boring machine cutters, the machine may be used for a multiplicity of operations, such as routing, gaining, milling and cutting out core-boxes.

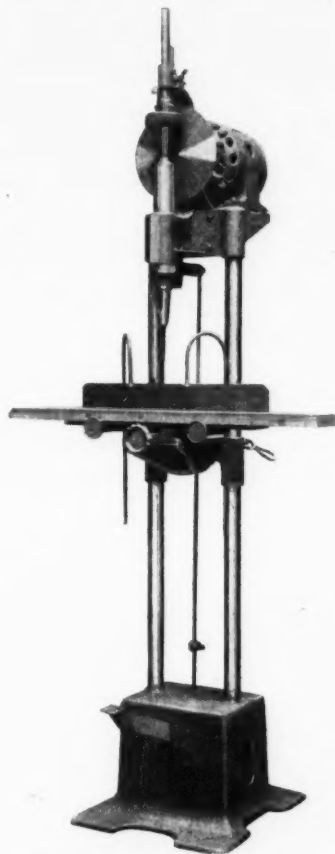
The motor may be quickly detached from the machine and used to operate grinders, small lathes and any other machines requiring power within its capacity.

Table adjustments are quickly, easily and accurately made. The table may be tilted to an angle of 45 degrees and has a vertical adjustment of over 15 inches. The stops may be adjusted to hold regular or irregular pieces, making the machine adaptable to a wide variety of work, including furniture and cabinet making, pattern making and manual training school work in addition to the regular sash and door shop work. The head casting may be blocked out to give the bit more overhang if special requirements make it necessary.



Paint Applied With Compressed Air

The accompanying illustration shows how paint is applied to the walls of a building with a portable compressed air painting outfit. The compressed air supply is taken from the tank on the truck in the foreground, the gasoline engine and air compressor being mounted on this truck. The paint is supplied from the 5-gallon tank standing near the center of the picture. The spray at the nozzle is under control of the operator by means of a trigger under his index finger. Ad-



Hollow Chisel Electric Mortiser and Multiple Speed Boring Machine.



By the Use of This Portable Equipment, Paint Is Forced Thru the Tubing and Sprayed on the Wall by Compressed Air.

justment of the spray may be quickly made by means of a knurled screw which regulates the density of the spray from nothing to the full capacity of the nozzle. The trigger actuated valve is very sensitive and can be opened to any desired degree.

The type of equipment shown in the illustration is one of several types included in a system of finishing which embodies equipment for finishing of all kinds of surfaces in which stains, primers, surfacers, shellacs, varnishes, undercoats and enamels are applied on wood, and lacquers, primers, fillers, paints, surfacers, japans, varnishes, enamels, asphaltums, bronzes and celluloid materials are applied on metal. The system includes a number of accessory appliances which are used to adapt the various types of equipment to any special conditions under which they might be placed in service.



Materials Handled Quickly With Special Equipment

Evidence of the strenuous efforts of railroad officials to keep cars moving and relieve freight congestion is found in their growing interest in all devices designated for rapid unloading of cars at team tracks and sidings.

Recently a New Jersey contractor, Conrad Sebolt by name, receiving crushed stone in cars on the P. R. R. at New Brunswick, N. J., purchased a material handling device for the rapid transference of



Materials Are Shoveled From the Car Into the Loader and Only a Few Seconds Are Required to Load the Truck or Trailer.

stone into his motor truck. It was the first such device in town. J. H. Herron, the freight agent at New Brunswick, after watching the operation of the loader for a short time and noting the speed at which Mr. Sebolt unloaded his stone, became decidedly interested. Learning from the contractor the address of the manu-

facturer, Mr. Herron wrote for information and catalogs and distributed the latter among all of the contractors, coal dealers and industrial concerns receiving material at the New Brunswick sidings. He also reported the matter in detail to the Divisional office so that the information might be handed on to freight agents over the entire Pennsylvania system.

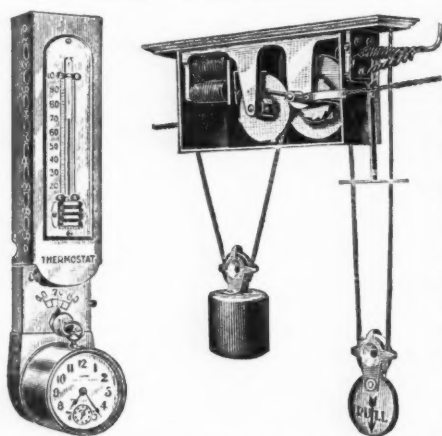
Efforts such as this by officials large and small, of all of our railroads, are what keep freight moving during these strenuous times despite car shortage, war preparations and an unprecedented volume of freight shipments.



Thermostat Heat Regulator Saves Fuel

The thermostat heat regulator shown in the illustrations offers three prominent advantages: first, low popular price; second, extreme sensitiveness to any temperature change and third, mechanical simplicity.

The thermostat, which is usually placed in the main living room, is connected by wires with the weight motor hanging from the ceiling of the basement. Two dry cell batteries



The Thermostat on the Left and the Gravity Motor on the Right Make Up the Principal Parts of an Automatic Heat Regulator.

supply the electric current which operates the motor, causing the check and draft dampers on the furnace or heating boiler, which are connected to the motor by chains, to alternately open and close.

Extreme sensitiveness is obtained in the thermostat by using a peculiar style of coil

spring made from an alloyed metal. This coil is so sensitive to heat and cold that gloves are worn when adjusting the thermostat so the heat from the hands will not cause inaccuracy.

The motor has no springs or other delicate moving parts to get clogged or rust in a damp or dusty basement. It is built like an old-fashioned weight clock, is practically fool proof and should last indefinitely.

The thermostat is also made with a clock attachment so a low temperature may be maintained over night and then at an early hour in the morning the clock will operate and set the thermostat for a higher temperature thru the day.

Convenience is the main consideration for installing a heat regulator, altho they often save a shovel or more of coal a day, which, if estimated at 10 pounds, means more than a ton of coal saved in a season.

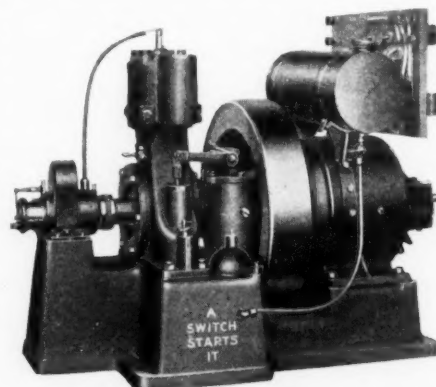


Sturdy Electric Lighting Plant

The gasoline engine is of the two-cycle type, which means the accompanying illustration is substantially constructed and as simple as good designing can make it. The plant is mounted on a solid cast iron base which permanently holds the magneto, engine and generator in perfect alignment and prevents discordant vibration between the parts. The batteries are mounted on a rack at some convenient point near the generating plant.

The gasoline engine is of the two-cycle type which means that there is a power impulse every revolution. The individual impulses may, therefore, be lighter than would be required if the four-cycle type of engine (giving a power im-

pulse every other revolution) were used at the same speed, and the power is more uniform with the larger number of power impulses. The heavy flywheel shown between the engine and the generator effectively smooths out the application of power to the generator and results in the maintenance of a reasonably constant voltage at the generator terminals. The oiling system of the engine requires no attention, since the oil and gasoline are mixed, together and as long as the engine will run, it is sure to be properly oiled.



The Output of This Lighting Plant May Be Used Direct Instead of Thru the Battery, if Desired.

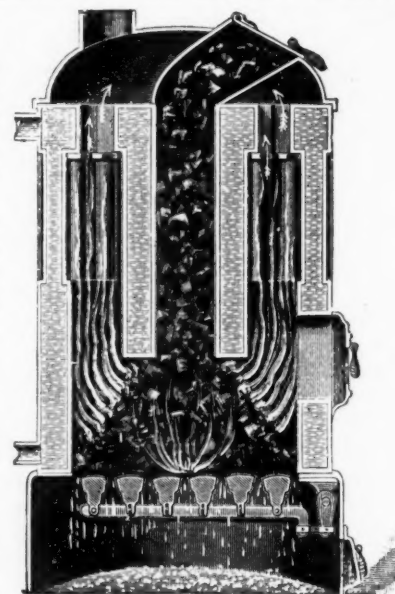
A high tension magneto is used for the ignition, which eliminates the coil and dry cells. The thermosyphon cooling system is used with a simple water tank. Ball bearings are used thruout on the crankshaft. By the use of a centrifugal governor, fluctuation of voltage is prevented when the load is thrown off or on. The plant is started with a switch and a simple means is provided for automatically stopping the engine when the batteries are fully charged. The output of the generator may be used direct, if desired, precluding the necessity of operating thru the batteries.



Water Jacketed Magazine Water Heater

Most hot water heaters have to be watched carefully or they will run out of coal, but the one shown here is equipped with a magazine feed which keeps a good supply of coal on hand.

Trouble has often been encountered in this type of heater by the magazine becoming overheated and causing gases to form which escape into the basement or the room or cause explosions. This trouble is prevented in the heater shown here by a water jacket which is placed around the magazine. This jacket keeps the magazine cool and prevents the formation of gases and the resulting inconvenience. The water jacket and the closed magazine keep the fire from burning anywhere except right on the grate where it is wanted.



The Water Jacket Around the Magazine of This Water Heater Prevents Overheating.

The heater can be used with a surface feed if this is desired, as it may be if a small amount of hot water is wanted.

The accompanying cross-section shows the construction of the heater with the magazine filled.



Portable Electric Rubbing Machine

The accompanying illustration shows the modern, efficient method of rubbing surfaces in the finishing process. This man is rubbing the varnish on a counter top with a portable electric rubbing machine. He can guide the machine over the surface with a single finger—its weight produces just the right rubbing pressure and the reciprocating motion of its two rubbing blocks is so accurately balanced that there is no tendency to "creep." His work at four in the afternoon will be just as thoro as it was at eight in the morning. Hand rubbing is very tiresome work and cannot be carried on continuously without loss of either quality or speed. Work



The Reciprocating Rubbing Blocks of This Machine Produce a Perfect Finish with Little Effort on the Part of the Finisher.

done with the machine is, at all times, more uniform than can be accomplished by the hand rubbing process.

The machine is very carefully constructed of high grade materials and it is so designed that the mechanism is fully protected against grit and other harmful substances. The entire machine above the rubbing blocks is encased in aluminum and a patent sliding shoe arrangement seals the aluminum case below the bearing surfaces of the block guides. All wearing parts are made of specially treated steel and bronze. Ball bearings are used to reduce the friction wherever possible.

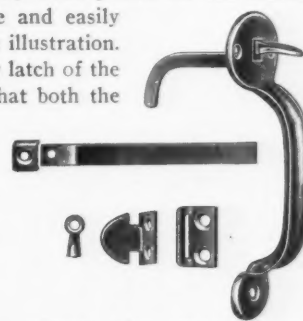
The machine is ready for work when it has been connected with a lamp socket and the current has been turned on. A regulator is provided to vary the speed to suit the work in hand. Varnish that is comparatively green will not stand as high speed as when it is thoroly dry. The length of the machine is 13 inches and it can be used for rubbing surfaces having a length of 15 inches or more, any width. It will rub into corners on

any surface larger than the machine itself. For instance, the sunken panels in the front of the counter shown in the illustration could be easily rubbed with this machine. The rubbing blocks carry felt pads and sanding pads may also be attached. The blocks are interchangeable and several sets may be kept at hand, fitted with pads for different classes of rubbing.



Wrought Steel Thumb Latch

The accompanying illustration shows a new full surface thumb latch which has recently been placed on the market. Its parts are few and simple and easily applied, as will be seen in the illustration. It is altered from the ordinary latch of the same class and character in that both the strike and guide plate are made to be applied on the surface rather than to be mortised, as is the practice ordinarily, saving much trouble and expense in labor and application. It is reversible for either hand and is packed one set in a box with screws to match.



Thumb Latch Which Requires No Mortising.



Combined Kitchen Table and Ironing Board

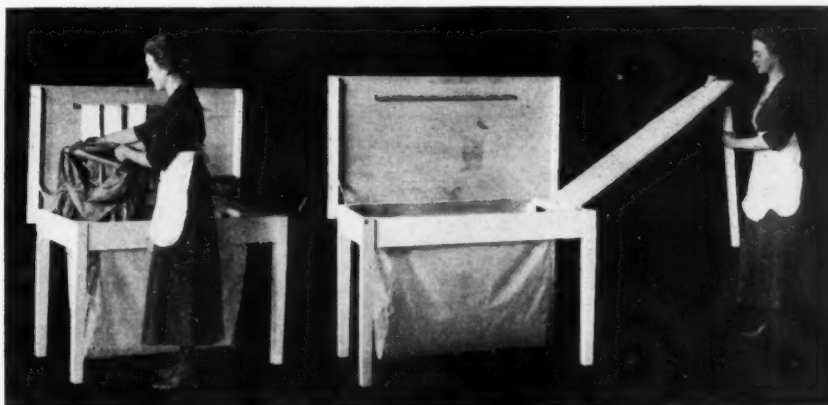
Convenience and economy of space are both secured in a new ironing board which occupies the lower part of a kitchen table. The table top is hinged, and when it is lifted up the ironing board is ready for use. One end of the board may be raised so that skirts may be slipped over it. The bag suspended from the frame protects the skirts and other clothing from dirt on the floor. The ironing board may be swung completely over and supported at the free end by an extra leg easily attached. There is space enough between the board and the table top to store the irons when the board is not in use. The table is solidly built so as to give a firm foundation for ironing. There are four different sizes to meet various needs, and at slightly greater expense the table may be provided with a porcelain enameled top.

FRED TELFORD.



Industrial Truck Hauls Building Material

One ordinarily thinks of three-yard dump wagons or big five-ton motor trucks when the subject of hauling bulky, loose materials is considered. However, the illustration shows a rig recently placed on the market which, because of

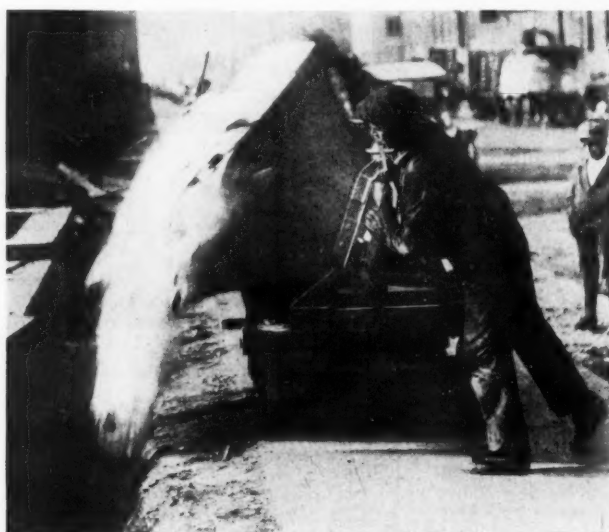


The Ironing Board Is Attached to the Kitchen Table Below the Hinged Top. The Board Is Used in Two Positions.

its extremely small size and simplicity and speed of operation, has made a decided hit with many industrial concerns and contractors.

The motive unit is an electric driven industrial truck of two-ton capacity similar to those commonly used in warehouses and railroad stations for handling trunks, boxes and miscellaneous supplies and heavy materials. Upon this truck is mounted a side-dumping hopper of 1½-yard capacity. One of the features of this patented machine, which differentiates it from the ordinary Koppel car, is that the load is thrown out several feet away from the truck as shown in the illustration.

Overall dimensions of the complete machine are, length,



Notice That the Load Is Thrown Well Away From the Truck in Dumping This Car. Motive Power Is Electric Storage Battery.

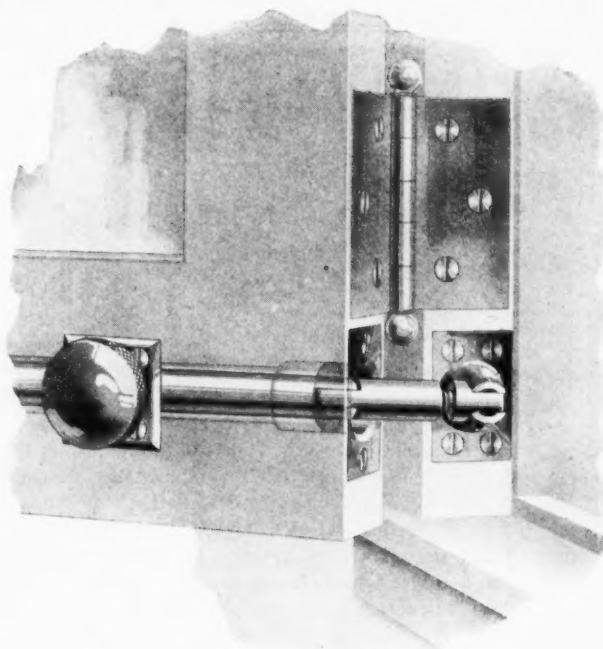
8 feet, width 4 feet, height 4 feet. Hoppers dumping in a similar manner off the end of the truck are also manufactured.



Concealed Casement Window Adjuster

The popularity of the casement window has been steadily growing. The necessity for high grade casement window hardware has consequently developed action on the part of the hardware manufacturers to the extent that some very clever devices are now on the market. The casement window requires a device to hold it in any given position. Very often it is desirable that this device be as nearly invisible as it is possible to make it.

The casement window adjuster shown in the accompanying illustration handles in a clever way the matter of a prac-



This Casement Adjuster Is Practically Concealed.

tically concealed device of this kind. The device is simple in construction and easily installed. It permits the window to swing 180 degrees, operates sash swinging in or out and is reversible. The standard size adjuster of this type will control sash having a minimum thickness of 1½ inches and will control sash hung on butts as large as 4 by 4 inches.

The sash is held in any desired position, but severe strain upon the butts is avoided because the lock acts as a brake.

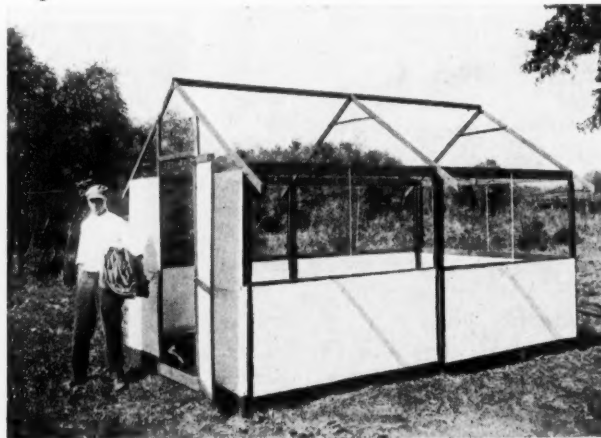


Collapsible Canvas Houses

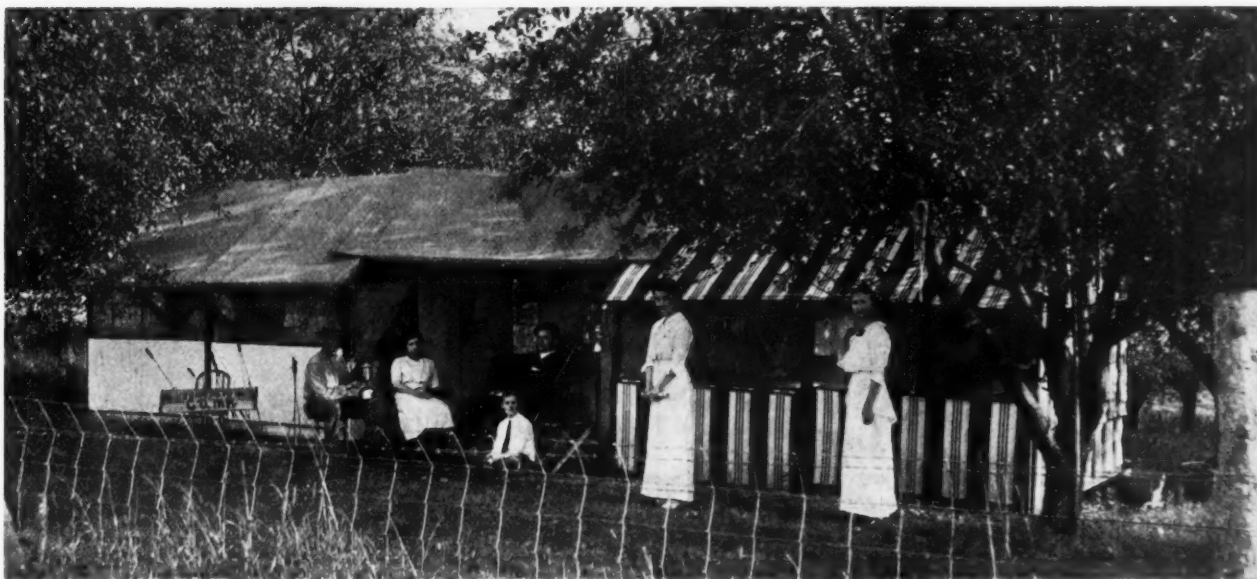
For those who wish to spend the summer months outdoors as fully as possible, or sleep in the open air at other times of the year, canvas houses that collapse so as to be easily portable meet every requirement. The material is so light that it can be taken on a camping trip, and the operation of putting up and taking down the house is so simple that if desired it may be put up on the lawn in the evening and taken down in the morning. No tools of any kind are required, and it is not necessary even to remove a bolt. The house is provided with screens so that troublesome insects may be kept out. The house may be left almost completely open in pleasant weather so the occupants may have the benefit of any slight breeze; for rainy weather it may be ventilated in any manner desired, with the weather side



Assembling the Parts That Have No Canvas Attached.



Ready for the Top or Cover Which Pulls on Like a Hood.



Solid Out-Door Comfort in a Two-Tent Group Near Colfax, Iowa.

closed; and for severe weather it may be made tight. The canvas house meets every requirement for living purposes for summer weather and sleeping purposes for winter.

FRED TELFORD.



New Lever Flush Bolt

The accompanying illustration shows a new burglar-proof lever flush bolt which has recently been placed on the market. This bolt is made of wrought steel except the extra

long bronze lever which operates so easily. It locks on a dead center and the action is positive so that the bolt, which has a $\frac{3}{4}$ -in. throw, cannot be jimmied. It is designed for use on double doors and is mortised into the astragal or joint edge of the inactive leaf of a pair of doors, or applied on the inside face.

With the mechanism occupying such a small space and the plate extending the full length of the bolt, it is easy to make a snug mortise and a neat looking job.

The strike plate is self-centering and wide enough to allow for any reasonable shrinkage of the door; the springs are piano wire, durable and strong, and liberal screw holding power is provided, ample for heavy doors. The bolt is made in 9, 12, 18 and 24-in. sizes, and is furnished in several different finishes.



Cement and Brick Surface Covering Compound

A compound has recently been placed on the market which waterproofs, protects and beautifies building exteriors of brick, concrete, stucco and other such materials. The compound is manufactured in several attractive and permanent color shades and is useful for all classes of ornamental concrete work such as bridge railings, balustrades, columns and posts and for structures of monolithic concrete, stucco, brick, concrete blocks and manufactured stone. It has the quality of penetrating and sealing the surface pores, thus permanently preventing water penetration, making the surface proof against driving rains.

The treatment consists of two coats of the compound. The surface to be treated should be perfectly dry. A flowing coat is applied first so that the surface pores will be thoroughly saturated. The second coat follows the first in 24 hours. Application is made with an ordinary wide brush. For two coat work, approximately 150 square feet of surface can be treated per gallon of the compound, but this will vary according to the porosity of the material on which it is applied.

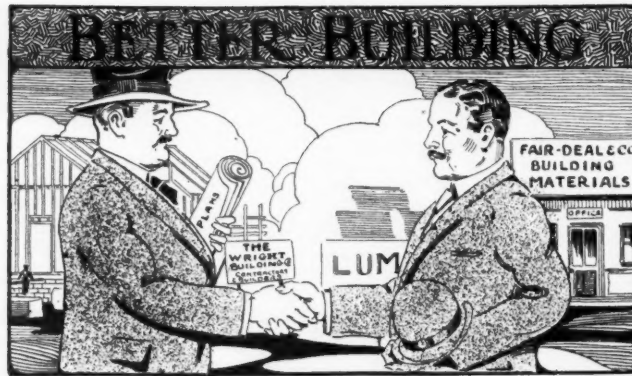
The American Builder Information Exchange will be pleased to furnish on request the name and address of the parties responsible for any of the interesting novelties or improvements described in these columns.



These Views Show the House Open and Closed Weather Tight.



Burglar-Proof Lever Flush Bolt.



**Dealer-Contractor
Good-Will Best
for Building**

Lumber Is Not High

COMPARATIVE FIGURES, LUMBER WITH FARM PRODUCE, SHOW THAT NOW IS THE BEST BUILDING TIME IN YEARS

CONTRACTORS and dealers who have to meet the arguments of farmers against building at this time on account of the advance cost of lumber will be interested in the following extracts from a circular letter which the Thompson Yards (Inc.), of Minneapolis, has recently sent its line yard managers:

"The comparisons appearing herewith are based upon average prices paid during 1914 and the first six months of 1917 in Minnesota, North and South Dakota and Montana, taken from official records:

1914		1917	
No. 1 Nor. wheat	\$0.95 to \$1.05	No. 1 Nor. wheat	\$2.70 to \$2.90
Barley	.40 to .50	Barley	1.28 to 1.38
Flax	1.30 to 1.50	Flax	3.10 to 3.50
Corn	.58 to .68	Corn	1.55 to 1.65
Hogs	6.75 to 7.25	Hogs	14.74 to 15.25
Oats	.32 to .38	Oats	.62 to .66
Rye	.72 to .78	Rye	2.30 to 2.50

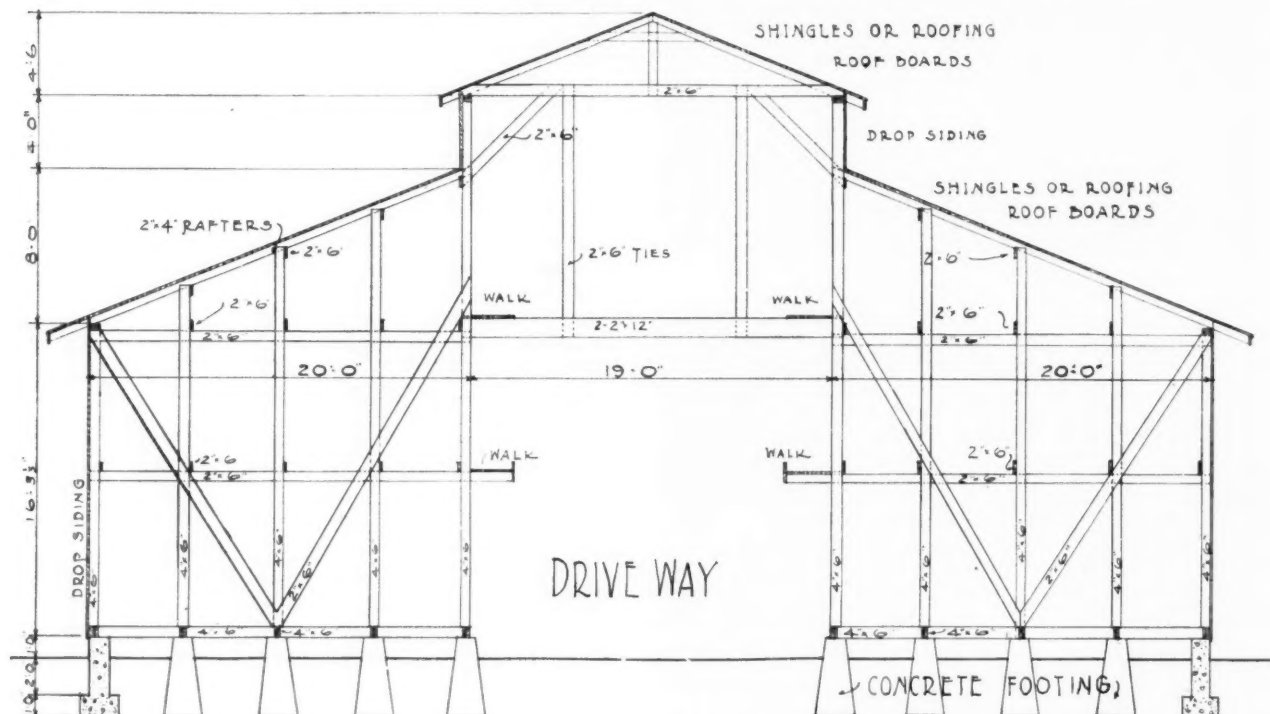
"In 1914 our cash prices on the lumber items named were:

Shiplap, boards and dimensions, on 40-cent fir rate, a thousand	\$22.50
Shingles, a thousand	3.15

"In 1917 our cash prices for same items, No. 2 quantity classification, were:

Shiplap, boards and dimensions, on 40-cent fir rate, a thousand	\$34.50
Shingles, a thousand	4.35

"A few facts of this kind will boost your sales. There is a mistaken impression that lumber is 'high.' These figures prove that it isn't true. The farmer will never find a better time to build than right now. His purchasing power is represented by what he produces. What brought him \$1.00 in 1914 now brings him \$2.00 or \$2.50. In other words, the same products now buy from two to two and one-half times as much



Cross Section of Lumber Yard Shed Illustrated on Opposite Page, Showing Approved Method of Construction.

Dealers and Contractors Work Together to Show Farmers That Lumber is Not High

69

as they did then. 'Dollar wheat' was hailed as a god-send; what of \$2.50 wheat?

"If lumber had advanced in proportion to farm products the farmer would now be paying from \$55.00 to \$70.00 a thousand for common and could afford it. As it is, prices are only about \$4.00 above list,

"There never was a better time to buy lumber than at the present! Compare the difference in your favor in the following table of what was required to purchase this barn then and now:

In 1914	In 1917
705 Bu. Wheat	351 Bu. Wheat



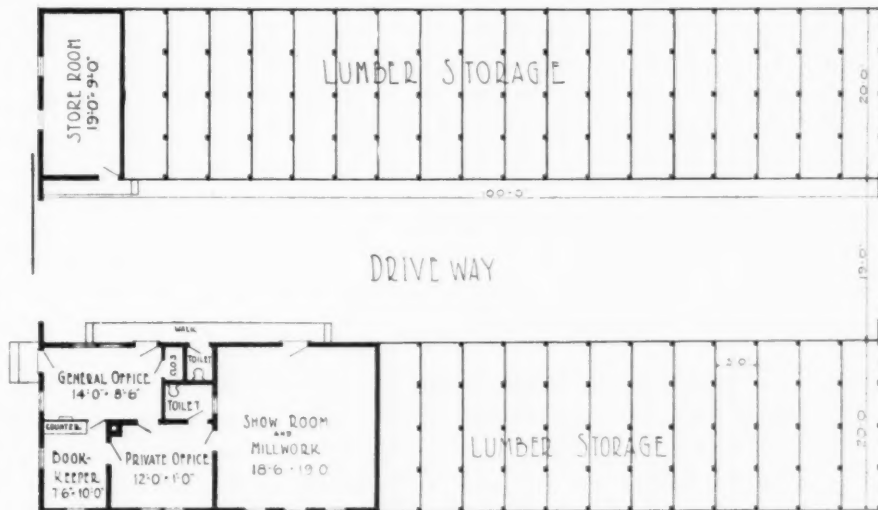
Here is a Type of Modern Lumber Yard Shed that is Finding Favor With Enterprising Dealers and their Customers. It Measures 59 Feet on the Street Front and Runs Back 100 Feet. All Materials Are Under Cover. Well Arranged Office Space is Provided at the Front.

and list represents the average normal value of lumber. To put it in another way, lumber is really only about 15 per cent above normal at the present time.

"Therefore, the dealer who imagines for a single moment that lumber is too high for the farmer to buy, or that it is not a good time for the farmer to build, can hardly maintain that position in the face of these facts. If you have any good farmer friends to whom you are anxious to 'tip off' something good, get them to build now. They will thank you many times in the future."

One of the newspaper advertisements of the Thompson Yards features a gambrel roof barn 32 by 56 feet with 14-inch shed along one side. Above this barn appears the slogan, "THE TIME TO BUILD IS RIGHT Now." Below appears the following:

"In 1914 it took forty hogs to pay for this barn, while at the present time it only requires twenty-four!



Floor Plan Layout of Lumber Yard Shed and Yard Office Affording All Conveniences for Transacting a Modern Builders' Supply Business.

1250 Bu. Corn	621 Bu. Corn
2220 Bu. Oats	1550 Bu. Oats
1710 Bu. Barley	745 Bu. Barley
1050 Bu. Rye	416 Bu. Rye
527 Bu. Flax	308 Bu. Flax

"Explanation: In 1914 Thompson Yards' cash price on this barn design was \$705.00. The average hog

(Continued to page 144.)



How to Do Work Right

APPROVED PRACTICE FOR PLACING WINDOW FRAMES AND FITTING SASH

By Aug. C. Schnake

Master Carpenter, Centralia, Ill.

IN several of the previous numbers of this magazine we have read articles on "How to do Work Fast." These treatises were very interesting and also instructive, showing where time could be saved and at the same time not affecting the quality of the work. While it is laudable to take advantage of the work, it isn't policy to try to do all work the quickest way possible. In the greater part of our work quality must be the first consideration, while quantity is a poor second. The object of this article is to explain how to do work right.

Anyone experienced in any line knows that to be able to finish a job right it is important that it be commenced right and carried thru that way. To get sash to work right it is imperative that the frames be made correctly, otherwise even the best mechanic works in vain. The first requirement is that the frames be exactly the same width top and bottom. Next in order is that the jambs be straight edgewise, then sidewise. If the frames are not the same width top and bottom the sash will either stick or rattle, depending on whether the fault is at the wide or narrow end. The practice of taking stock from the lumber yards and using for jambs without jointing it is hazardous business as the greater part of the lumber is "heap" crooked. This might sound exaggerated, but I've

(Continued to page 148.)



Details of a Stairway

Designed by Ralph W. Ermeling, Architect

THERE is something stately and rich about the stairway of a house which opens from the living roof. Some people prefer the main stairway in connection with the entrance hall, but there are often reasons why the stairway connecting the second floor directly with the living room is to be preferred. This is, perhaps, best illustrated in very cold weather. When the house has a rear stairway it is not necessary to have the stairs in the hallway for reasons of privacy.

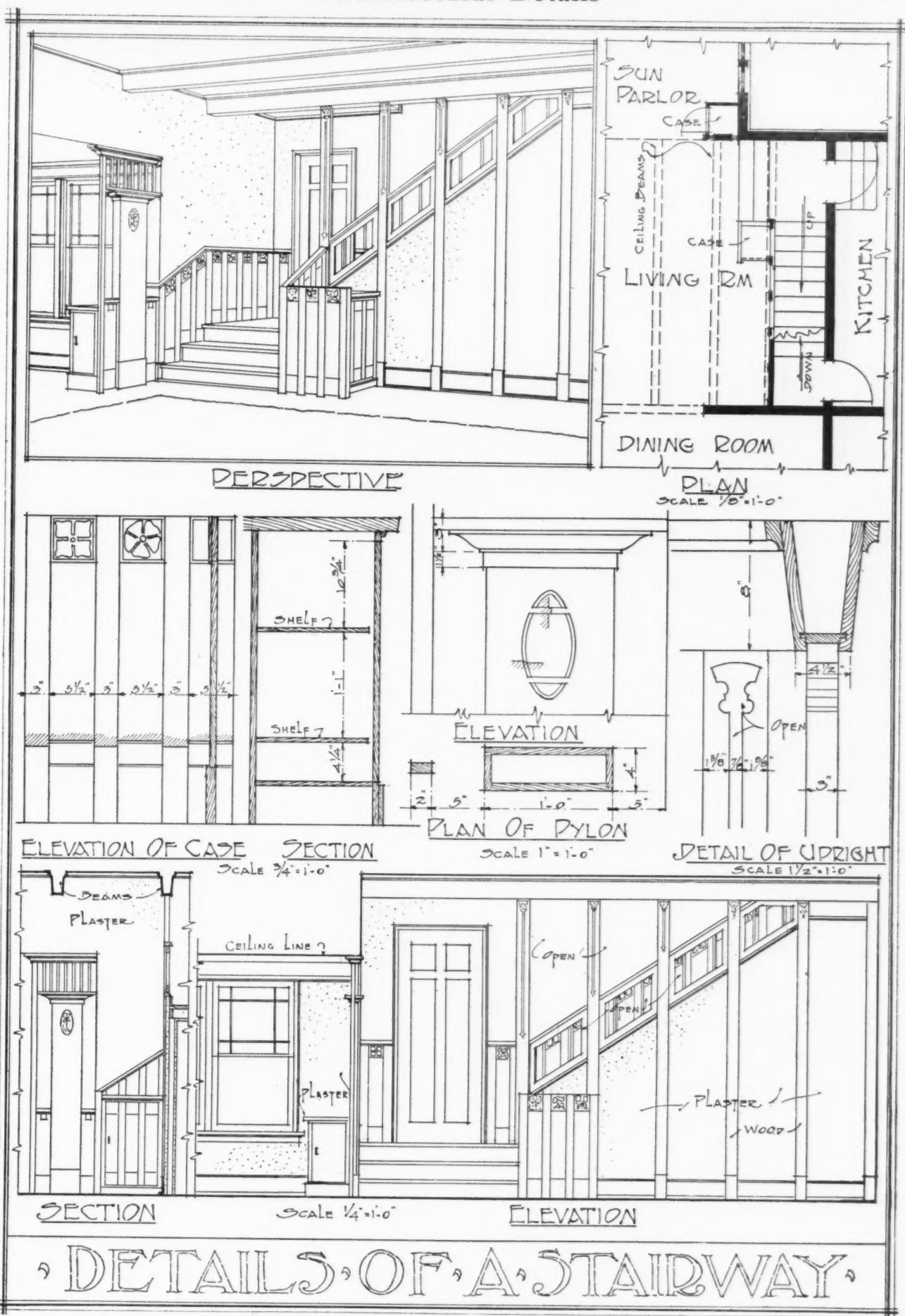
The stairway shown here is at one end of the living room directly across from the entrance vestibule. The sun parlor opens off the front of the living room

and the ends of the opening are partially screened by pylons and a simple grille-work over them. The pylons are hollow, made of $\frac{7}{8}$ -inch stock and surmounted by the grilles which are $\frac{7}{8}$ -inch square spindles. If the pylons are made of finely grained stock they should be mitred at the corners, or if gum wood—or other more expensive finish—is used, it would be better to use veneer. A small cabinet is built back of the pylon. It has any number of uses, and it furnishes a useful shelf top.

The stairway itself goes up three risers to a landing from which one may continue on up or enter the kitchen. The vertical members which form the side of the stair are 3 by 4 inches and they are housed into the beam of the ceiling above. They might be made of 2 by 4 stock, altho they look rather light in this size. The upper part of these uprights are simply ornamented by cutting a slot and finials out of the stock. The plaster is then brought out almost flush with the face of these uprights and the moulding at the top of plaster panels is also very flat. The balustrade is constructed of $\frac{7}{8}$ -inch stock with a comparatively light top rail, and with $\frac{7}{8}$ -inch square spindles set in the openings.

The wainscot and rail which takes place of the usual newel at the foot of the staircase are alternately $5\frac{1}{2}$ and 3 inches in width, the 3-inch strips being set out $\frac{3}{8}$ of an inch further than the wider strips. These wider panels have ornaments at the top, or rather two alternate ornaments. These are $\frac{1}{4}$ inch in thickness and are sawed and bored out to shape and then bradded or glued in place. These ornaments, while simple and inexpensive, are very effective.

At the base of the stairway a music cabinet is built in and fitted for Victrola records. These are kept best in books according to the size of the records—10 and 12 inches, respectively. The height to allow for the books to be fitted into the case is $10\frac{3}{4}$ and 13 inches, respectively. They are 2 inches in width and may be laid on their sides on the bottom shelf. The space within the cabinet may also be subdivided for piano player rolls or for sheet music.



Perspective Sketch, Floor Plan and Details of Open Stairway Going Up Out of a Living Room. A Design of Considerable Originality.
By Ralph W. Ermeling, Architect.

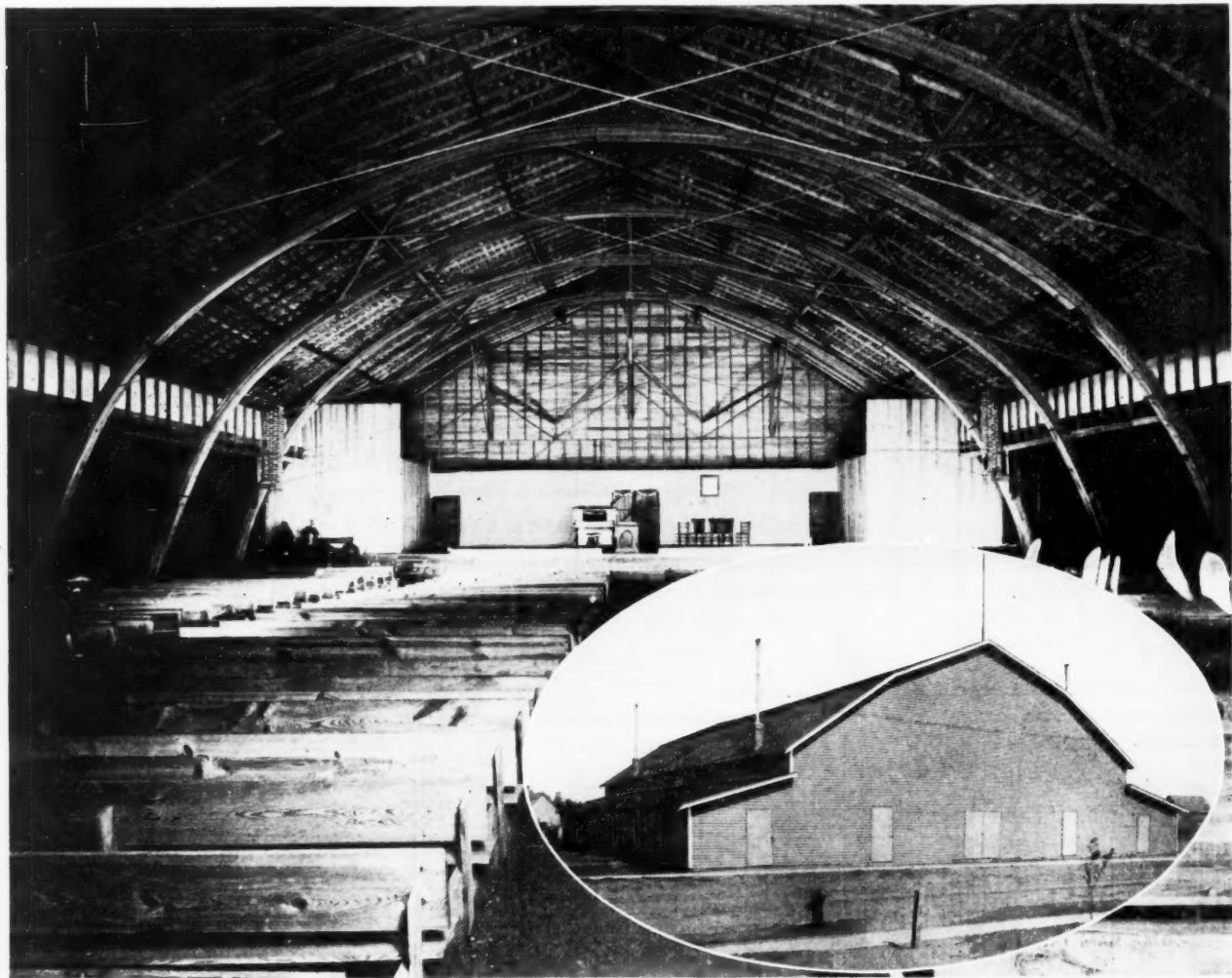
Novel Construction Methods Used in Community Auditorium

COMMUNITY AUDITORIUM AT FREDERICK, OKLAHOMA, DESIGNED AND BUILT BY A. H. KRAUSE, UTILIZES NOVEL TYPE OF ARCH TRUSS CONSISTING OF A LONG LAMINATED MEMBER SPANNING 80 FEET

A VILLAGE or town which has no building with a sufficient seating capacity to serve as the meeting place for the people of the community when they are gathered together is, indeed, lacking in its provision for the fullest enjoyment of community life. There are any number of occasions when such a building may be used advantageously in the ordinary course of events in the community, and when it is once provided, a committee may be appointed to

any one person being \$100, the amounts varying from this down to \$1.00. No profit was taken by anyone connected with the erection of the building and materials were supplied by the local yards at the lowest possible cost. The building cost approximately \$4600.

The building is especially interesting to builders because of its novel construction. All foundations and truss footings were made of concrete. The laminated truss members were laid out on the ground by



Interior and Exterior View of Community Auditorium at Frederick, Oklahoma, Designed and Erected by A. H. Krause, General Contractor. Seating Capacity Is 1,600 and the Acoustic Properties of the Building Are Such That All Can Easily Hear What Is Said on the Stage.

arrange special meetings which are more effective in the enlightenment and entertainment of the people than any other course which might be pursued to attain this end.

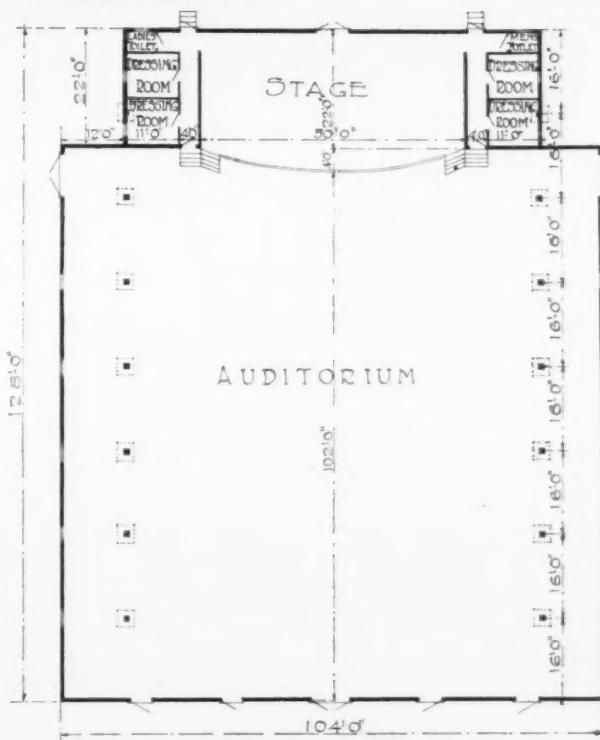
Communities which are lacking in this respect may learn much from the example set by Frederick, Okla. The community auditorium shown in the illustrations on this and the following page, was built at Frederick by popular subscription, the highest amount given by

striking off the radius and driving 2 by 4-inch stakes in the ground and bracing them in place. The inner board was placed against the stakes first, after which ply after ply of the 1 by 12-inch No. 1 yellow pine lumber was nailed in place. The first nailing was done with 8-penny nails, three-ply being placed in this way; the remainder was nailed with 16-penny nails. Joints in the inside and outside boards were made opposite each other and clamps were installed as shown on the

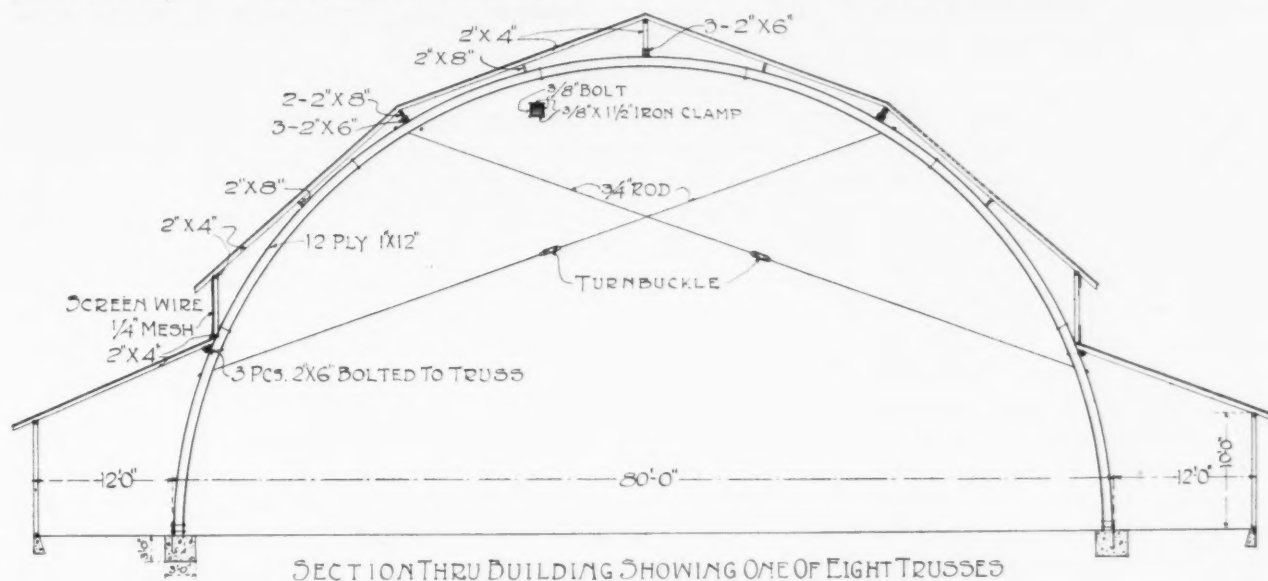
building section illustrated. The tension rods were put into place after the wood member had been assembled. The trusses were hoisted into place with a derrick; one of the illustrations shows the beginning of this operation.

When the truss footings were placed, two iron straps $\frac{1}{2}$ by 2 inches in size were set into the concrete in each footing, the truss being bolted to these straps when in place. The ends of the truss members were secured to the straps with chains while the truss was being raised. A wire stay was used across the bottom of the arch to prevent spreading during the hoisting operation. The footing straps bear on the outside of the truss and prevent spreading as the truss is placed in the building. The arches had to be slung in three places, since they were very limber. As each one was bolted, it was plumbed with a level and braced. After all of the arches were in place it was necessary to loosen the tension rods on one side or the other and align the arches.

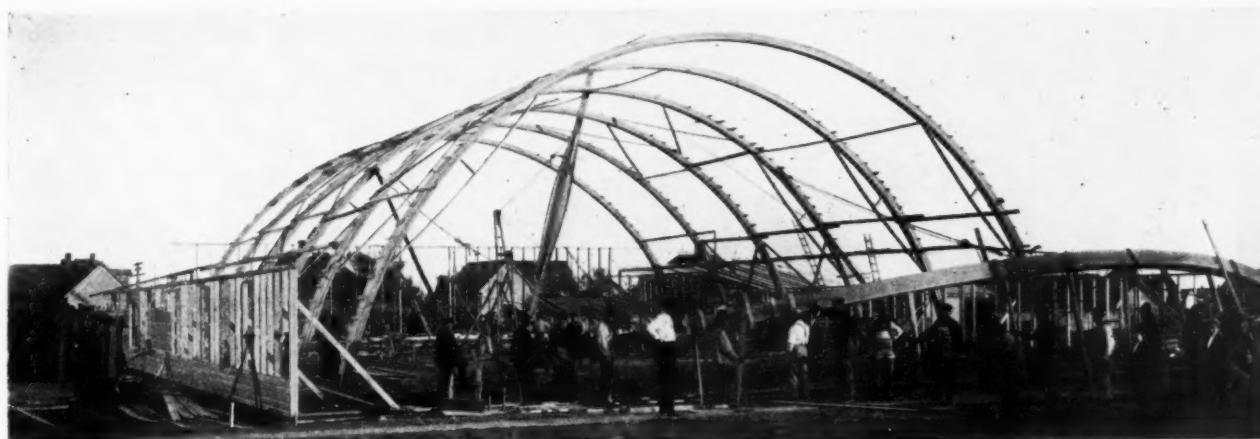
The outside of the entire building is covered with 6-inch drop siding. Between the windows on each side of the building, the sides are hinged at the top and made to swing out at the bottom for ventilation.



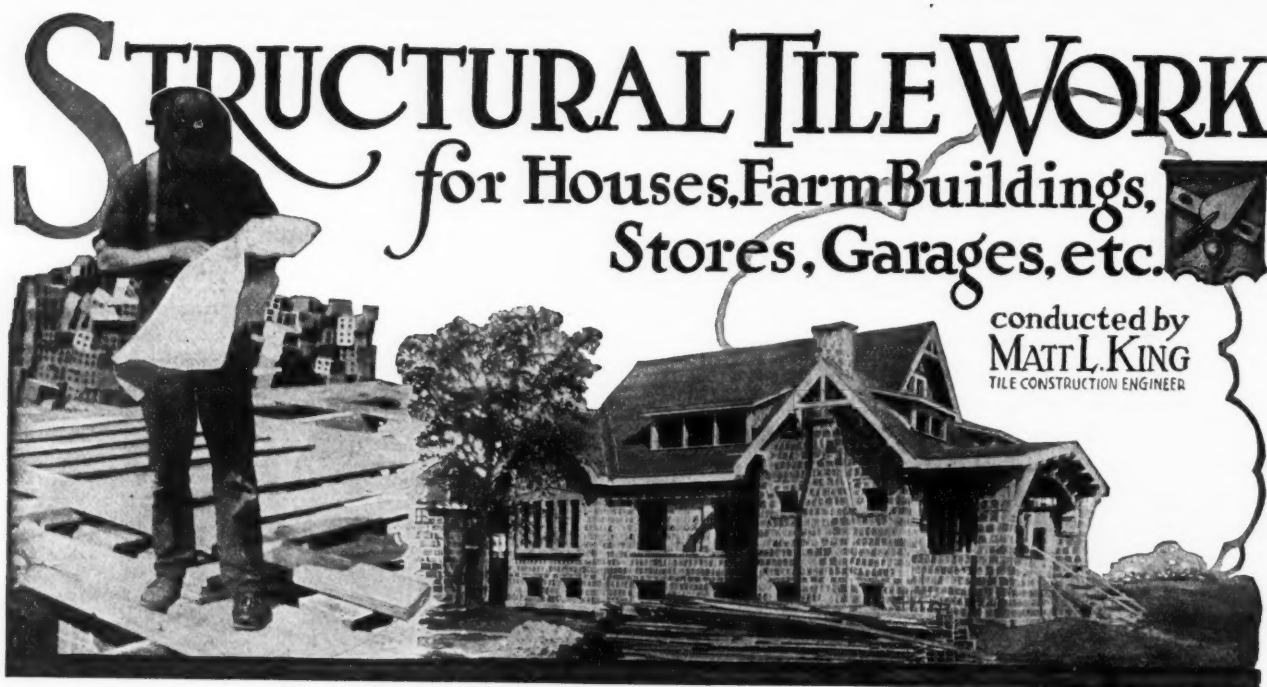
Floor Plan of Auditorium.



SECTION THRU BUILDING SHOWING ONE OF EIGHT TRUSSES



Plan, Building Section and Detail Photograph Showing Principal Structural Features of the Frederick Community Auditorium. The Photograph Also Shows One of the Arch Trusses Being Raised Into Place.



Roofing a Hollow-Tile Residence

DETAILS OF TWO METHODS OF STRICTLY FIREPROOF CONSTRUCTION—HOW TO ATTACH A TIMBER ROOF TO TILE WALLS

By J. J. Cosgrove

"SPEAKING of roofs," remarked my friend, the old building superintendent, "there is much to be learned by the average builder about roofs for buildings. There are roofs for fireproof buildings, and fireproof roofs for buildings; and the one must not be confused with the other. A roof for a building may be either of wood or hollow tile. A fireproof roof for a building must be of hollow-tile, slate, concrete or other fireproof materials, altho the building itself might be of combustible material.

"A glance at some of these blueprints will show the difference, and incidentally the different methods of roofing buildings of hollow tile. Take this print of interlocking tile, for instance (Fig. 1). Any of three methods can be used with this type of block. In the first method the lugs are broken from the face of

the tile, and a roof plate is secured to the wall by means of toggle bolts. These toggle joints are secured to the top course of tile.

"In the second method a 2 by 8-inch plate is spiked to the 2 by 4-inch plate to form a rest for the rafters and ceiling beams. In the third method a 2 by 4-inch plate is bedded in mortar to bring it flush with the top of the outside course of tile, and the ceiling beams, or attic floor joists and rafters may rest equally on this plate and the tile blocks.

"After the roof rafters are in place and ready for the sheathing, the spaces between the rafters may be filled to the top level of the rafters with hollow tile to keep out the cold.

"When a frame roof is put over hollow-tile walls of usual construction, the roof plate is anchored to the wall by means of anchor bolts about 30 inches

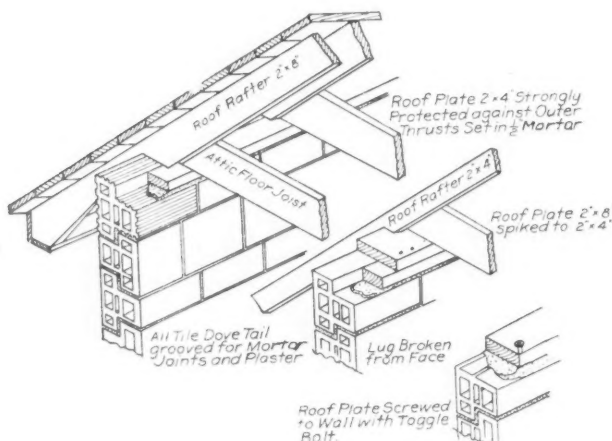


Fig. 1. Three Methods of Roof Plate Construction.

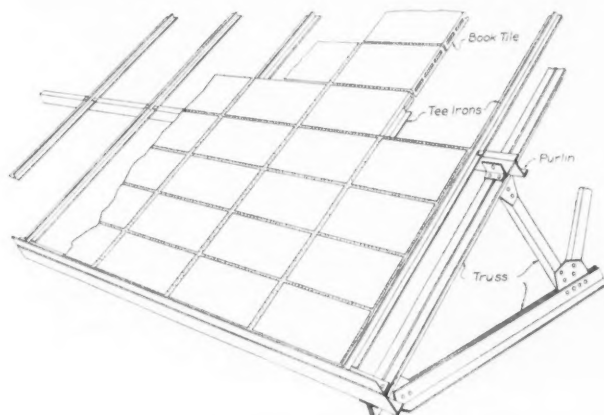


Fig. 2. Detail of Book Tile Steel Roof.

long and spaced about 5 feet apart. The joists and rafters are well spiked together and also to the roof plate. When this is done the anchor bolts resist the lifting tendency due to the wind when blowing a gale, and make for a more stable construction.

"These two prints," and he unrolled a couple more blueprints (Fig. 2 and Fig. 3), "show two vastly different types of roofs, but both of them are strictly fireproof. One of the problems which had to be worked out in the design of fireproof residences was

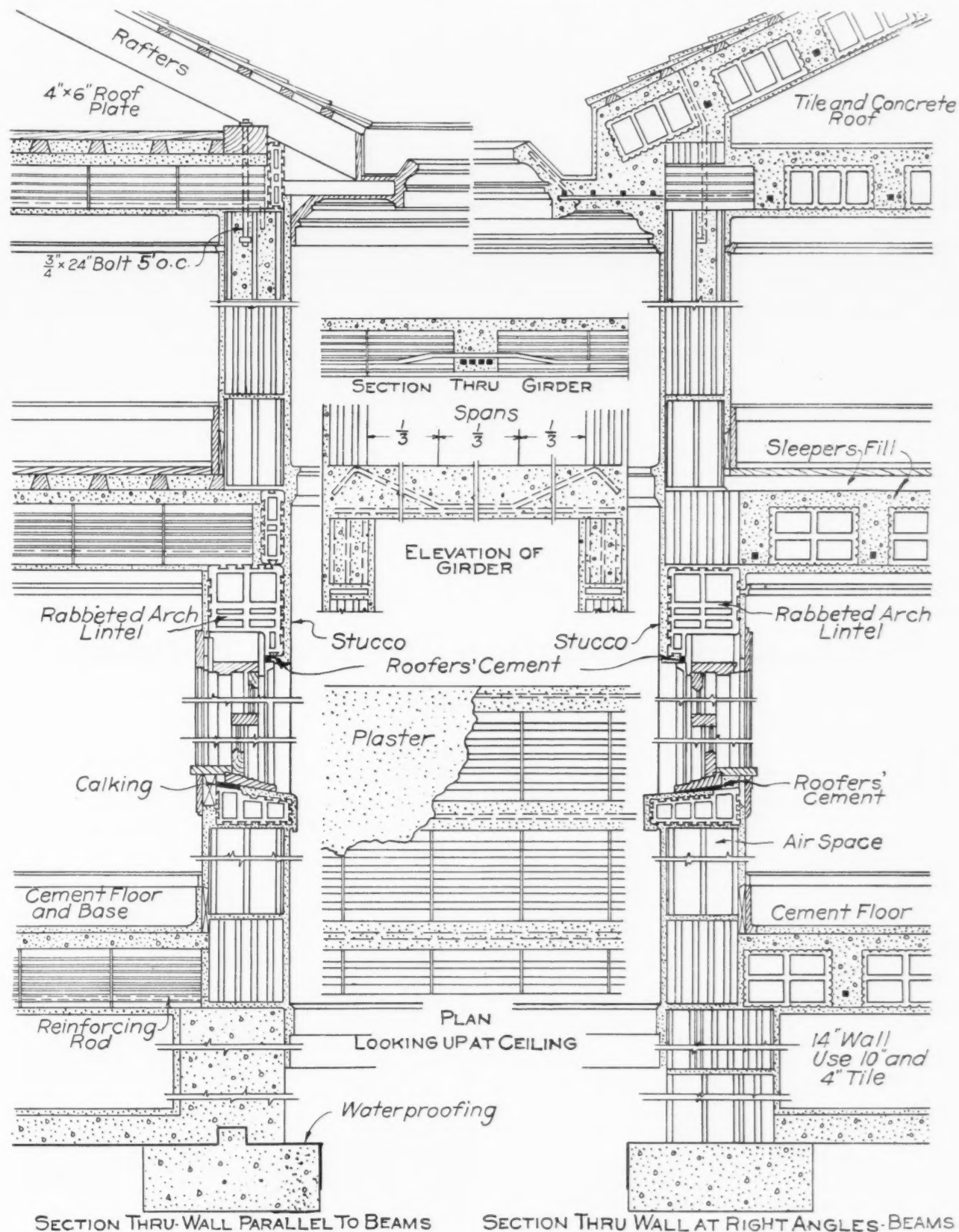


Fig. 3. Detail Showing Relation Between Tile Walls and Tile and Concrete Floors and Roof, Also Timber Roof.



A Good Example of Tile Roofing on Tile Houses Faced with Stucco and with Brick; Location, Darlington Road, Pittsburgh, Pa.; Harry S. Bair, Architect.

a hollow-tile roof that could be constructed at moderate cost. To do so a pitch or gable roof had to be built without the use of structural steel members. A flat fireproof roof could be readily designed which would require no structural steel, but a flat roof would not lend itself to the architectural treatment of residence buildings, and a pitched roof using structural steel would increase considerably the cost of the building.

"This plan solves the problem satisfactorily. The roof is of reinforced hollow-tile construction, similar

to reinforced hollow tile floor construction, and is carried on the walls and bearing partitions of hollow tile built up from the attic floor, so that the entire roof load is supported like a floor, thereby relieving it of all thrust.

"For buildings having wide spans without cross-partitions for support, this truss roof of steel with book tile is an ideal construction. The book tile are supported on tee irons laid between purlins; and the book tile are of porous material so that slate shingles or roofing tile can be nailed directly to them."

Two Examples of Hollow Tile Farm Buildings

PERMANENT COMBINATION STRUCTURES THAT ARE O. K.

By C. A. Willson

Eng. Dept., Permanent Buildings Society.

WITH the increased demand for better methods of farming has come the increased demand for permanent, substantial farm buildings. In this article two examples are given showing how several small buildings, which were not permanent, have been combined into one larger building which is permanent.

The accompanying photograph illustrates a combination of a smoke house, a store room and an ice house with cooling space underneath.

The ice house, which is the largest of the rooms, is 12 by 14 feet. The cooling room below is 5 by 6 feet. Contrary to ordinary practice, the ice was stored in the south end of the building. The apparent disadvantage of this arrangement was overcome by means of shade trees.

A passage, 4 feet wide, leading from the north end to the ice storage room, separates the smoke house from the store room. Each of these rooms is 5 feet wide and 6 feet long. This makes the entire building 14 feet wide and 18 feet long. The walls are of hollow tile 8 inches thick. The floor is 5 inches thick, also of

hollow tile, but covered with a very thin coating of cement.

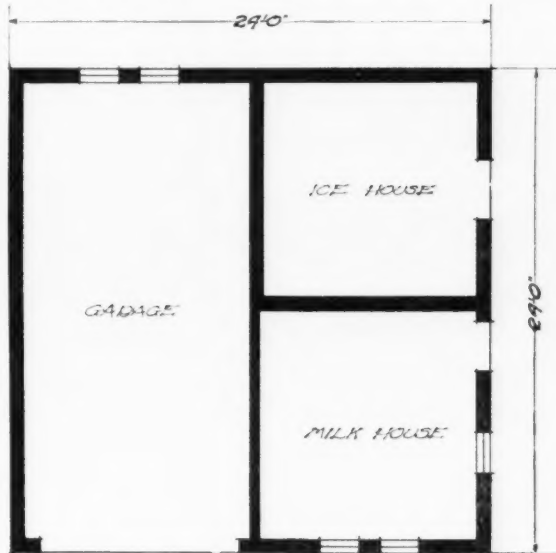
The drawing shows another arrangement, but embodies the same general idea of combination. Ample space is provided in the garage for an automobile and



Ice House, Smoke House and Store Room of Hollow Tile.

buggy or wagon, with space for a small shop situated at the rear. The garage measures 12 by 24 feet, so there is plenty of room for the shop.

Adjoining the shop is the ice house, which is 12 feet by 12 feet in size, outside measurement. By making the opening toward the north an ideal location is se-



Floor Plan of Combined Garage, Milk House and Ice House of Hollow Tile Construction. Where Hollow Tile Is Used for Inside Partitions there is no Objection to Combining these Several Buildings Under One Roof.

cured, for, with the other rooms arranged as they are, the walls of the ice house are never exposed to the heat of the sun.

Next in order comes the milk house, which is 12 feet wide and 12 feet long. It is lighted by windows in both outside walls, and since it is entered only from the outside it is entirely separated from the shop and garage, much the same as if it were an individual building. At the same time it is in direct connection with the ice storage room.

In another similar building part of the garage space was partitioned off for a laundry. Located in this way it is well lighted and well ventilated, and it also is entered only from the outside. Between wash days this will be the proper place for the storage of washing machine, boilers, tubs, etc., and on wash days it will be found a decided improvement over a corner of the back porch. If the building is not near the house it would be advisable to construct a flue in one corner of the room, set up a small laundry stove and heat the water for washing in this room also.

The outside walls of the building, and also the inside walls of the ice storage room, are 8 inches thick, constructed of 5 by 8 by 12-inch hollow clay building blocks. The floor and other inside walls are 5 inches thick, also of hollow blocks. The floor may be made of hollow tile seconds. Most clay products manufacturers will be glad to sell these at a price less than that of first quality blocks. The roof can be made of rafters and sheathing covered with prepared roofing, or, better still, a fireproof roof can be made of tile.



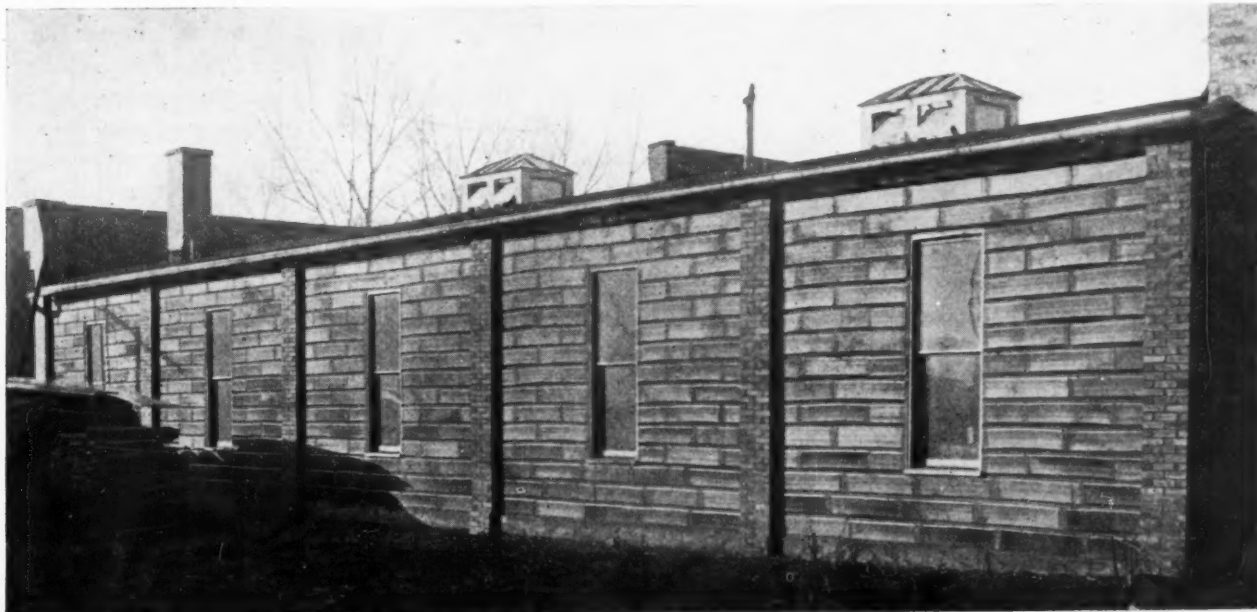
Plastering and Furring

It is very seldom in a residence or other moderate sized tile buildings that we have occasion to use furring of any kind. Plaster or stucco is applied directly on the tile. This is in general the most permanent and satisfactory material to which stucco and plaster can be applied. In case furring of any kind is necessary, it should be tile furring. Otherwise there may be a question of permanence or fire risk involved.

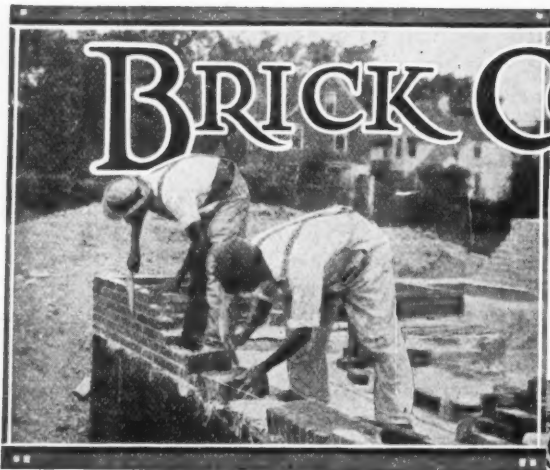


Yepsen Now Sales Manager

V. L. Yepsen, advertising manager of the National Fire Proofing Company, Pittsburgh, has been elected second vice-president and manager of sales.



A Public Garage at Galva, Ill., Showing How 9 by 9 by 36-Inch Conduit Seconds Are Utilized in Connection with Face Brick Front Wall and Piers to Make a Substantial Building.



BRICK CONSTRUCTION

for Modern Carpenters and Builders



Striking Brick Porch Improvement

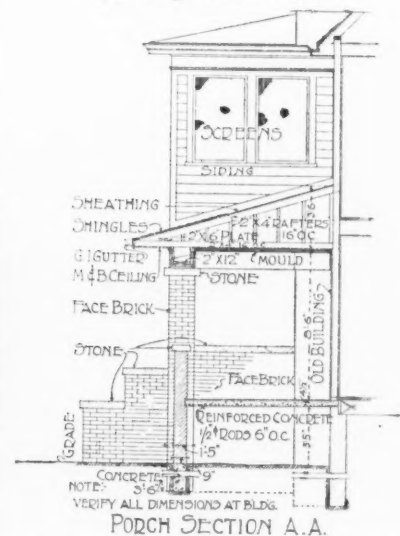
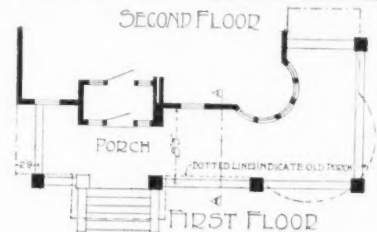
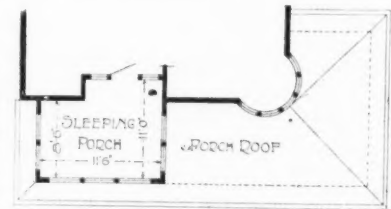
AS a matter of protection, the money invested in keeping a place up to date indicates sound, good judgment on the part of the owner. No person can be so sure of his future that it is unnecessary to pre-

pare for unexpected circumstances. It is the well kept up place that is most quickly sold.

Face brick, as a material for the improvement of old houses, is most effective. A new face brick porch on the old house is a protective investment as well as a means of providing increased comfort for those who occupy the house. The effect which may be obtained in altering the appearance of a house is shown by a comparison of the two views below. This is the result of replacing the old porch with a new one of face brick, with a frame sleeping porch above a portion of it. The remodeling plan has been prepared at the request of Mr. C. C. Fenwick, of St. Joseph, Ill.



These Views Bring Out a Striking Comparison Between the Appearance of the House as It Is and as It Might Be.



Plan and Section Showing Details of Porch Improvement.



FACE BRICK POSTS FOR ORNAMENTAL IRON FENCES. When it conforms with the style of the residence and there is sufficient lawn surrounding the buildings, an ornamental iron fence with trim face brick posts is a most effective means of ornamentation. The design of the metal work should, preferably, be as simple as possible. The face brick posts should be capped with white stone or terra cotta, ordinarily, but it is sometimes possible to work out a cap from brick laid on edge which is very artistic. The principal objection to capping the posts with brick is that the contrast between the body of the post and the cap is lost. The face brick should be of the same pattern as those used in the house. The size of the post should be proportioned to that of the porch pillars or to some other conspicuous part of the house. The design should also bring out a definite relation between the post and this part of the house. A fence which is too conspicuous is more of a detriment than it is an aid in making the grounds attractive. The fence must not detract the attention of the passer-by from the house. For this reason it must not be too elaborate. The evident purpose of the fence should be to ornament the premises and a repellent aspect should be carefully guarded against. If the fence is to be used, however, it should be designed in such a manner that small animals are prevented from roaming over the lawn.

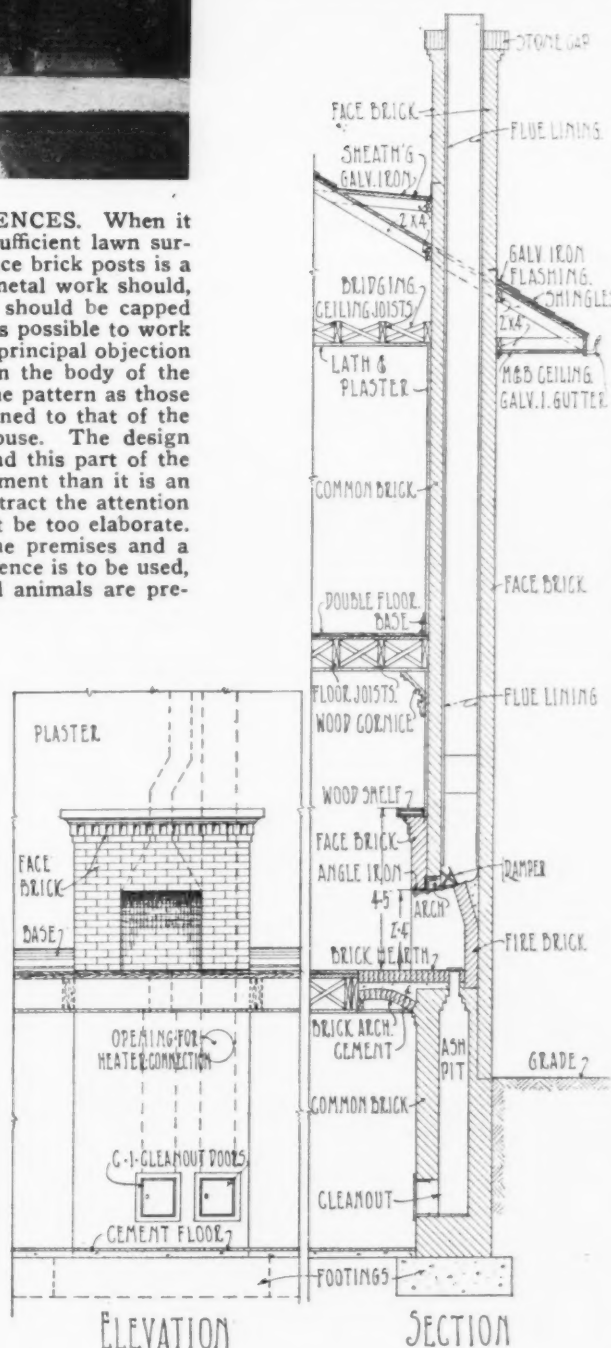
What Will An Outside Brick Chimney Do?

The answer to this title question is the answer to the question, "How may an inexpensive frame cottage most easily be given the appearance of a building of much higher cost?" In the hands of an experienced designer, even the most inexpensive cottage may be given a rich appearance by the use of an outside chimney of face brick. There is such a wide range of color and texture effects possible and such a diversity of designs which may be worked into the surface for ornamentation, that the possibilities of this method of building are almost unlimited.

The fireplace elevation and chimney section shown here will indicate the structural details with which the builder should be acquainted. Fundamentally, a good foundation or footing is required. Its size should be carefully figured so that the bearing on the subsoil will be as nearly that on the subsoil beneath the remainder of the house foundation as possible, and then if any settling occurs it will be equal in all parts and cracks will not develop. Common brick are used up to grade and within the walls of the building to the roof. When the heater is served by this chimney,

a double flue is used, each part lined with flue lining. Cast iron cleanout doors are placed at the bottom of the fireplace ash pit and the heater flue. The section shows the hearth supported by a brick trimmer arch. A concrete slab, reinforced, may be substituted if desired. Fire brick are used to line the fireplace and a modern damper is installed.

The chimney should *not* be used to support any part of the building. Never set joists or other inflammable members into the brickwork.



Fireplace and Chimney Base Elevation and Chimney Section Showing Details of Good Outside Chimney Construction.

Pushing Sale of Brick by Proper Display

EVERY RETAIL LUMBER DEALER SHOULD INSTALL AND MAINTAIN ON DISPLAY A GROUP OF FACE BRICK SAMPLE PANELS—THE BRICK MANUFACTURERS WILL FURNISH THE MATERIAL.

"GOODS well displayed are half sold." This is the keynote of modern merchandising, and goes far toward accounting for the marvelous successes built up in many lines of trade during the past ten years. Go into any up-to-date store during a good volume of business, and one of the most striking features for the man on the lookout for selling ideas is the fact that practically the entire stock of goods is on display. Materials are out where they can be looked at and examined, and are exhibited so attractively that they actually sell themselves.

In dry goods and furnishing stores this idea has been worked up most elaborately; the city "department stores" owe their huge success almost entirely to this one principle; and general stores have increased their sales wonderfully by it.

The shopper comes into a store with a single purchase in mind; an attractive display of some line catches the eye—perhaps the price is a little bit special—and, unless said shopper is of a very stubborn character, two purchases are made instead of the one intended.

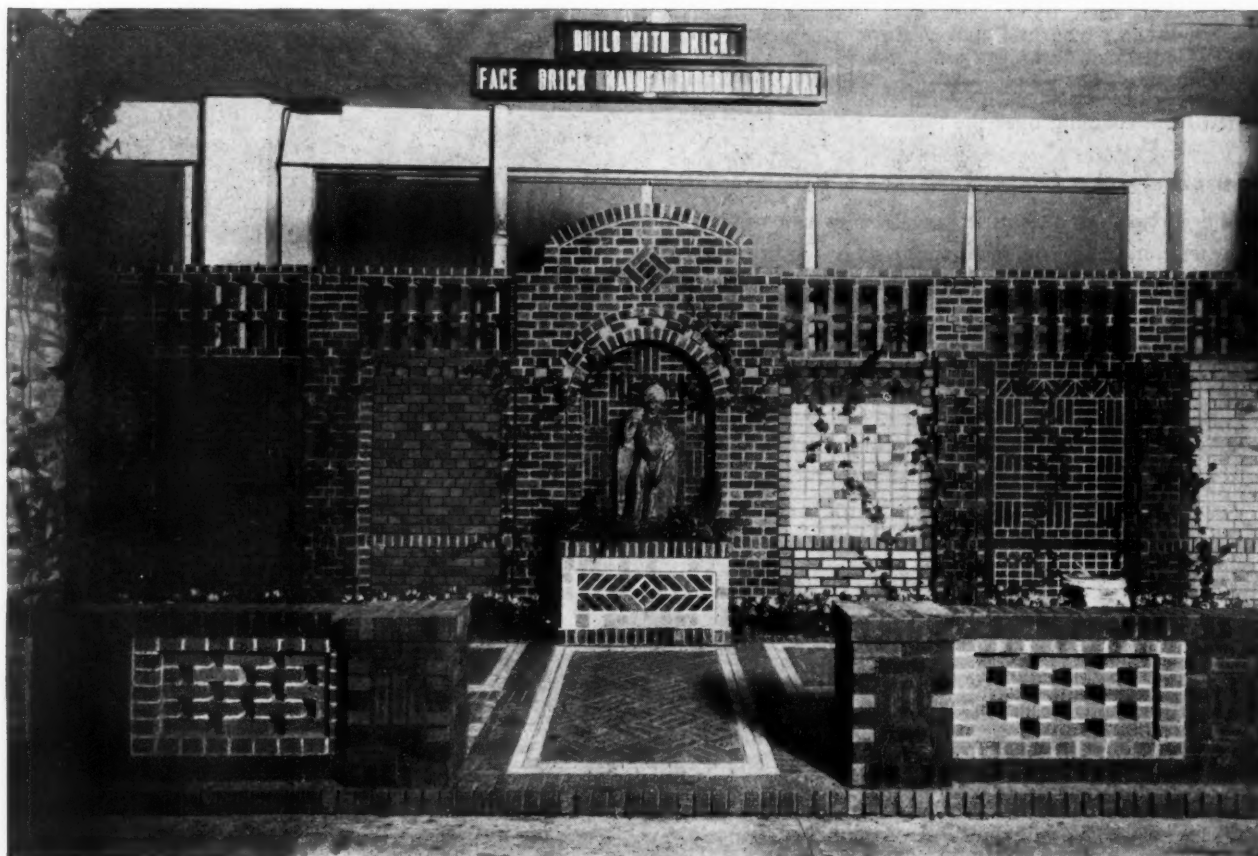
This is the goods-display that increases sales. There is also the type of display, much in use among wide-awake merchants, that helps them sell the customer

the goods he is in search of by making it easy for him to examine the entire line and so make an intelligent selection. This is the kind of display most vitally interesting to dealers in building materials and it is this that we want to call particular attention to.

The man who is going to build, or his agent, the architect or building contractor, comes to the building material dealer to select the materials to be used in the work. For instance, in regard to the brick—the face brick for the front and trimmings of the building and the special artistic brick for the fireplaces; the owner knows in a vague sort of way that there are a number of different face brick on the market that might well be used on his job—all varying in color, texture and cost; he wants to see all of them, or at least enough to be able to make up his mind with some degree of satisfaction that he is choosing wisely and is getting the best the market has to offer in line with his particular job. Such a man, naturally and rightly, expects the building material dealer to help him in making this choice; and nine times out of ten he is going to give the business to the dealer who can do this satisfactorily.

In this connection brick display enters as an im-

(Continued to page 128.)



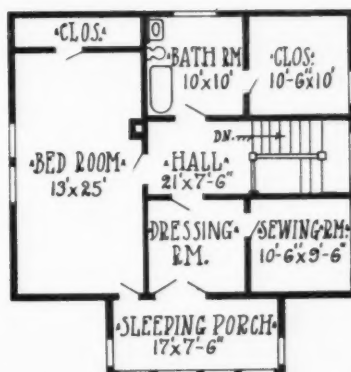
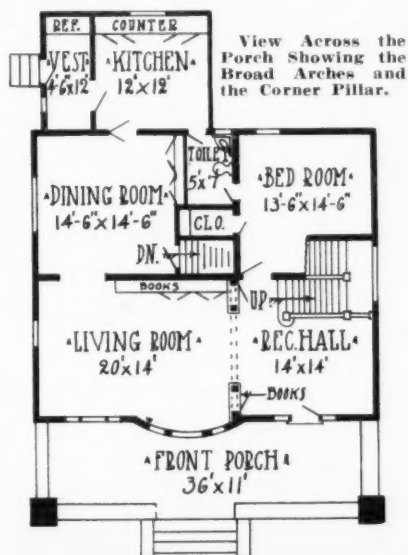
A Display of Face Brick Laid Up in Various Attractive Bonds and Combinations of Mortar Joints Like This Will Bring Business to Any Lumber or Building Material Dealer.

Brick Bungalow of Fine Proportions

An unusually well arranged, well divided residence is that illustrated here. It was built for Mr. F. L. Pease, Hastings, Neb., by Mr. E. M. Gilbreth, of Hastings, who also designed it.

A full-width porch, 11 feet deep, railed around solid from the foundation, is built in front. A broad arch, from two corner pillars, adds to the charm of this porch.

Entrance is into a reception hall, from which a wide cased opening leads into the large living room. Along the back wall are book cases and a fireplace.



First and Second Floor Plans of the Gilbreth House.

Behind this living room is a square dining room, lighted by a very large window. Thru a swinging door is the kitchen, where a built-in counter of shelves does service as pantry. A vestibule from the kitchen gives rear entrance.

Between kitchen and downstairs bedroom is a lavatory and toilet. Taking up the width of the lavatory is the closet for this bedroom. Separating bedroom and reception hall is the stairway.

Upstairs is a large bedroom, 13 by 25 feet; a bathroom, 10 by 10 feet; a closet, a dressing room, and a sewing room—each about 10 by 10 feet.



Well Constructed Face Brick Residence Designed and Built by E. M. Gilbreth of Hastings, Neb. The Details of the Roof Have Been Carefully Worked out, Giving the House an Appearance of Artistic Strength.



Model Home Designs

Pleasant Frame Cottage

The exterior details of this pleasant little cottage are worked out with wood in the form of shingles for the main walls, ornamental battens and boards under the gables, a massive chimney of face brick and concrete for the porch steps. The pergola porch roof and exposed rafters add a decorative touch which is pleasing. To relieve the possibility of excessive dark tones, the window and door trim is finished in white.

The arrangement provides for entrance thru a reception hall having a colonnade opening into the living room. The bedrooms and bath extend back on one side of the house and the dining room and kitchen, with its pantry, occupy the other side of the house. There is a rear stoop with entrance, thru a small entry, into the kitchen.



FLOOR PLAN

Floor Plan of Cottage Shown in Perspective Below.



Perspective View of Frame Cottage Having a Well Balanced Gable Roof. The Appearance Is Pleasing and the Interior Is Arranged to Provide the Utmost in Comfort and Convenience.

Fireproof Duplex House of Neat Design

The two-flat building shown on this page is of fireproof concrete construction, designed and built by Nels Quam of Willmar, Minn. The outside walls from the basement floor up are double, each wall being 4 inches thick with a 3-inch air space between. The moulds used in the construction of the walls were made by the builder. The first floor is of reinforced concrete, beamed from 4 to 7 feet on centers. The second floor is of combined concrete and hollow tile construction, using 5 by 12 by 12-inch tile, 4½ inches apart, for the concrete beams and having a 2-inch top layer of concrete, which gives the floor a thickness of 7 inches.

The roof is constructed in the same way as the second floor, except that tile from 4 to 8 inches thick were used in order to get slope to drain the roof to the center of the building, from which point it is conducted to the cistern. All partitions are solid concrete, 5½ inches thick in the basement, 4½ inches thick between floors and 4 inches thick above the second floor.

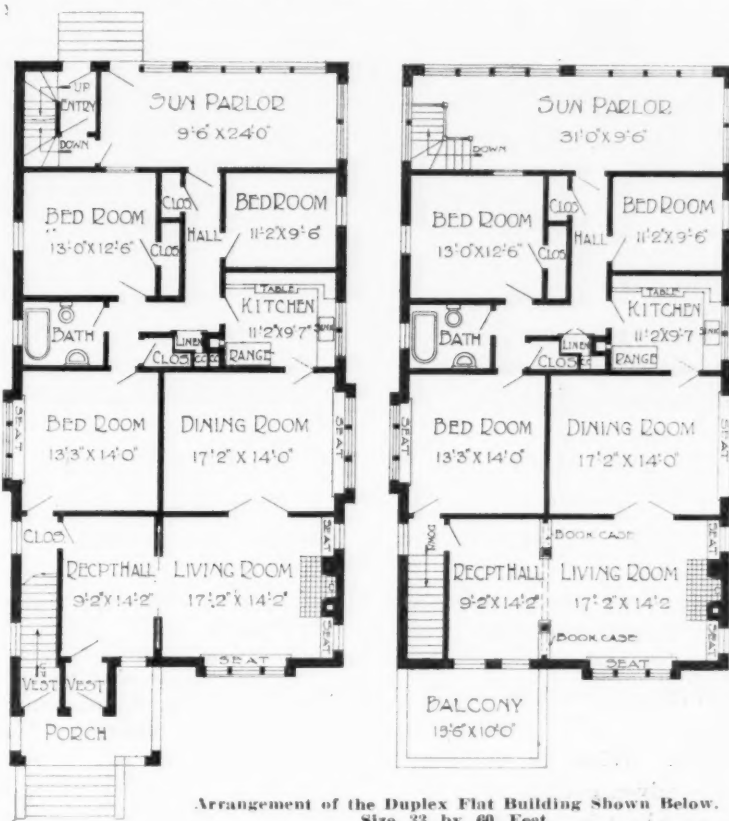
Porch and roof railings and balustrades

are of monolithic reinforced concrete, using wood forms. The outside wall and ceilings under the roof were furred and lathed. Mr. Quam states that he has built houses without the furring and lathing, but that in the cold climate where this building is located, he finds it advisable to use them.

The living room, dining room and hall are finished in white oak and the rear rooms are in birch with maple floors. The

cost of the building is approximately \$10,000. There is a garage to the rear of the building which is built in the same way. The flat building is 33 feet by 60 feet and the garage is 24 feet by 26 feet. The stucco used on the body of the house is made of white cement with red sand, and that on the trim is made of white cement with white sand.

This is a most excellent type of construction for a building of this style. It is certainly true that the average tenant is less careful of the house which he lives in than the owner would be. Fire is one of the principal sources of destruction which must be guarded against. Furthermore, most people are willing to pay more for the rental of a fireproof building.



Two-Family Flat Building of Fireproof Concrete Construction at Willmar, Minn. The Building Is Owned by Mr. Nels Quam and Dr. I. S. Benson and Was Built by Mr. Quam; O. A. Fridlund, Architect.



Comparative Figures Prove Cement is Not High

THESE ARGUMENTS WILL HELP CONVINCE YOUR CUSTOMERS—NOW IS THE TIME TO BUILD

By Blaine S. Smith

General Sales Manager, Universal Portland Cement Co.

IS the price of cement high? Some people think so, but as a matter of fact, cement has not kept pace with the recent general advance in price of raw materials and finished products. The fact can be proved.

The farmer's case is plain. What he produces shows a much greater price advance than what he buys. An acre of potatoes or wheat has greater purchasing power than before, and in terms of rural products, cement actually costs the farmer less than formerly.

Other Commodities Have Advanced More Rapidly in Price than Cement

The same general situation is found in the city. Labor earns more and spends more. Manufacturing concerns sell their products for more and pay more for raw materials. Extensions to a factory are made at higher cost for building materials, but in the case of cement, the advance is not so great as the advance in selling price of articles produced in the enlarged plant.

Bradstreet's, the financial agency that rates all business concerns, for years has made a careful study of the "ups and downs" of prices. No one commodity can show the general trend, so the following 107 articles are used:

The 107 Commodities on Which Bradstreet's Bases Its Index Prices

- 6 *Breadstuffs*—Wheat, corn, oats, barley, rye, flour.
- 4 *Livestock*—Beaves, sheep, hogs, horses.
- 24 *Provisions and Groceries*—Beef (carcasses), hogs, mutton, milk, eggs, bread, beef (family), pork, bacon, hams, lard, butter, cheese, mackerel, codfish, coffee, sugar, tea, molasses, salt, rice, beans, peas, potatoes.
- 6 *Fresh and Dried Fruits*—Apples, cranberries, peanuts, lemons, raisins, currants.

- 4 *Hides and Leather*—Native steer hides, hemlock packer, union, oak.
- 11 *Textiles*—Cotton, wool (two grades), hemp, jute, silk, flax, print cloths, sheetings, gingham, cotton sheetings.
- 13 *Metals*—Iron ore, pig iron (three grades), steel billets, steel rails, tin plates, steel beams, silver, copper, lead, tin, quicksilver.
- 4 *Coal and Coke*—Anthracite, bituminous, Connellsville coke, Southern coke.
- 6 *Oils*—Petroleum (crude and refined), linseed, cottonseed, castor, olive.
- 3 *Naval Stores*—Rosin, turpentine, tar.
- 8 *Building Materials*—Brick, lime, cement, nails, glass, yellow pine, Eastern spruce, Pennsylvania hemlock.
- 11 *Chemicals*—Alum, bicarbonate soda, borax, carbolic acid, caustic soda, nitric acid, sulphuric acid, phosphate rock, alcohol, opium, quinine.
- 7 *Miscellaneous*—Hops, rubber, tobacco, paper, ground bone, hay, cottonseed.

The following table of index figures for July of several years past and for May, June and July of this year shows the July, 1917, index to be 90 per cent over the July figure in 1909:

Bradstreet's Index Figures Show Trend of Prices

Bradstreet's		Bradstreet's		Bradstreet's	
July, 1909...	8.45	July, 1913...	8.9521	May, 1917...	15.1203
July, 1910...	8.92	July, 1914...	8.6566	June, 1917...	15.4680
July, 1911...	8.5935	July, 1915...	9.8698	July, 1917...	16.0680
July, 1912...	9.1119	July, 1916...	11.5294		

Note particularly that Bradstreet's Index Number, based on prices of a great many commodities including cement, shows a substantial *increase* from May to July, 1917, during which time there has been *no change* in the price of cement. This means that there have been recent price advances in most important commodities except cement.

(Continued to page 136.)

Concrete Beams for Spanning Large Porch Openings

By Albert M. Wolf

Assoc. M. Am. Soc. C. E.

THE appearance of many a fine residence has been marred by the sagging or deflection of long span lintels over porch openings caused by improper design or consideration of the deflection thereof under load. Any apparent sag in a beam lintel (one with level under surface) gives an appearance of instability and weakness even to persons having no knowledge of the mechanics of materials and is, therefore, doubly objectionable. In stucco work it is quite common practice to frame false arches under horizontal lintels and if the latter are not stiff enough the deflection will crack and render unsightly the stucco.

For long span porch openings, wooden trussed beams are quite often used. These are generally "just built,"

frequently on large residence work, but to give good results they must be designed for a very limited deflection rather than simply for strength. In frame construction some difficulty is presented in boxing in such lintels while for a stucco house they must be wrapped with wire mesh and plastered or entirely encased in concrete to give the desired outline to the beam. With the present high cost of structural steel (five to seven cents a pound erected, for small work) the most logical material to use for porch lintels where permanency is sought, is reinforced concrete.

If the facing material used on the structure is brick, the brick can be anchored to the concrete so as to mask the beam entirely on any such part as it may be desired to cover. In general, however, this process will be found difficult of execution, since

each individual brick must be anchored. In many cases, however, a steel angle anchored to the outside face of the lintel beam will meet the requirements of sup-

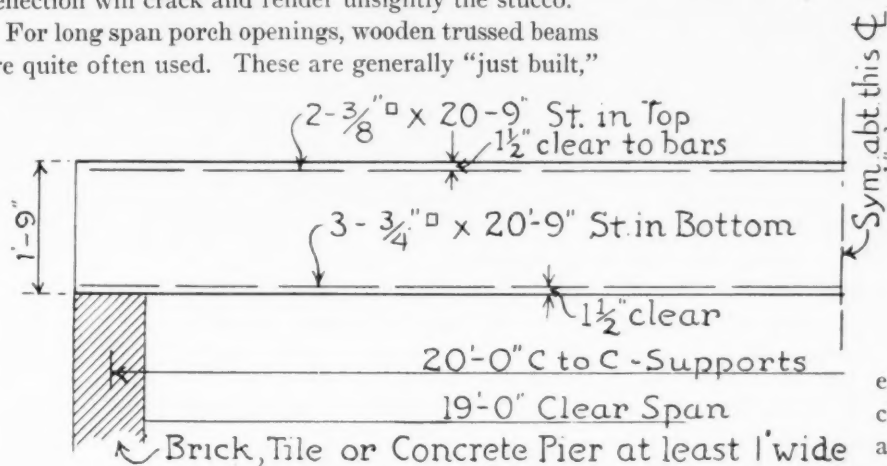


Fig. 1. Detail of Single Span Concrete Porch Lintel.

rather than designed, and they are usually entirely too strong or not strong enough. If the latter is the case, a sag will be noticed soon after completion, which becomes more pronounced as the timber dries out. In bungalow construction, especially where the porch lintels generally support the main roof construction sufficient depth is not provided to give a stiff trussed lintel. In first-class construction, then, a wood beam lintel or modification thereof in trussed form is not to be recommended for long span lintels where any small sag will be readily apparent.

Lintels made up of structural shapes are used more

supporting the brick facing, the angle with a 4-inch leg projecting being set flush with the bottom of the lintel and the under surface plastered and painted if desired.

For buildings of hollow clay tile, concrete block, or reinforced concrete walls to be finished with stucco, the concrete lintel beam can be used to the best advantage, for it can be formed to any desired contour; that is, as a plain lintel beam, one with brackets or any shape of arch, the concrete poured and the stucco applied directly thereto to obtain the desired finish.

(Continued to page 152.)

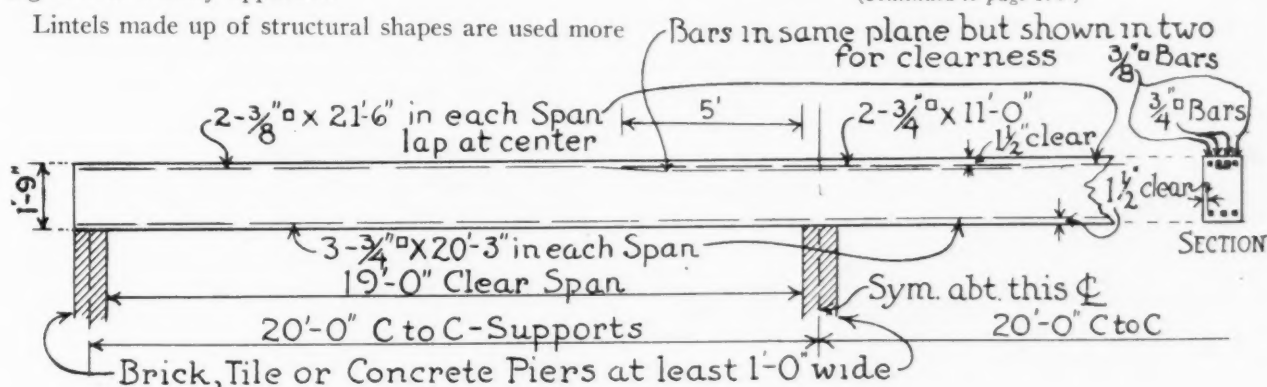


Fig. 2. Detail of Two-Span Concrete Porch Lintel.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Advise Stronger Ties in Crib

To the Editor:

Spencer, So. Dak.

I was noticing in your August number the cross section of crib Fig. 2A, page 85; and wish to say that the 2x6 cross ties which are at the center of crib part will never hold the weight of ear corn which comes upon it. I formerly used 2x6 and had to go back and fix every one over. I use a rough 1 in.x12 in. which I find holds up in most cases. This may help some one out of trouble some time to know this. I have been a subscriber to your paper for several years and like to read it very much.

MAX SAMP,

Contractor and Builder.



Well-Framed Lumber Shed

To the Editor:

Rosholt, Wis.

Here is a big lumber shed frame built of hemlock all thru. All posts were built up or membered of 2 by 6, and gave best service. Building is now used as lumber shed for the Wisconsin Building Material Co., whose general offices are at Schofield, Wis.

We used 85,000 white cedar standard *A* shingles for the roof.

WISCONSIN BUILDING MATERIAL CO.,

PAUL J. BREHMER, Local Mgr.

Something for the Typewriter Men to Think About

To the Editor:

Carbondale, Ill.

I have been wondering why some manufacturer of typewriters does not get up a machine for the small contractor to get out material bills on. To get out a material bill on the standard keyboard is a puzzling proposition for most stenographers, let alone an amateur like me, who, like numerous others, cannot afford to employ one anyway.

My idea of the machine would be to build it on the same principle as the adding machine, at least as to the keyboard, getting as many numerals on a key as possible, such as "2x4," "2x6," which require two changes to write, besides having to strike three keys. Also #2, S-4-S, "CLR," CY., YP., etc., could be put on one key and printed with one motion, instead of three or more. The machine should run a roll of paper, the same as an adding machine does, having the paper wide enough to carry the ordinary lumber bill. The paper should be rolled double, with a strip of carbon between, so that a copy could be kept for filing, then a fellow could sit down and knock out a lumber bill that the yard man could read and it wouldn't take all day to do it. With the thousand and one changes that you have to make on the ordinary machine,

(Continued to page 88.)



Timber Frame of Large Storage Shed for the Wisconsin Building Material Company at Rosholt, Wis.



For Years of Continuous Satisfactory Service

THE reason so many contractors and builders are using Stanley Garage Hardware is, that it is a complete line of ALL the builders' hardware needed for all kinds of garages. It is decidedly good looking, harmonizing with the lines of the garage: it is well made: and it does its work perfectly day in and day out. For the next garage you build be sure that you order



It is correct in every detail and can be relied on with absolute confidence.

Stanley Garage Door Holder No. 1774 locks the door open, preventing injury to car and occupants while entering or leaving the garage.

Get Stanley Bolts, Stanley Butts and Hinges, Stanley Door Pulls, Stanley Latches, and you will have the best and most modern garage hardware equipment.

*Write today for valuable illustrated booklet on **Stanley Garage Hardware**. It is sent free on request.*

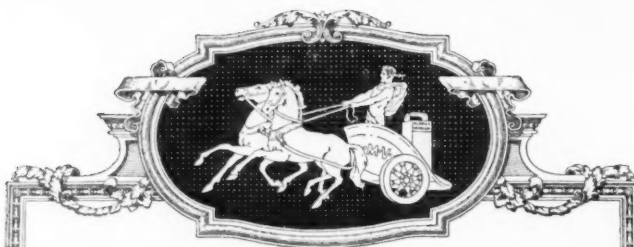
THE STANLEY WORKS

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100 Lafayette Street

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73 East Lake Street

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



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When you finish a job with Murphy Varnish or Murphy White Enamel, you feel safe. You know you've left a strong and trusty friend on guard who will protect your work from injury and keep it looking like new.

Murphy Varnish

"the varnish that lasts longest"

is not a luxury. Compared with ordinary varnishes the Murphy house-finishing products cover so much more area that they cost less to use than finishes that have less staying qualities.

May we send you further information about

Murphy Transparent Interior
Murphy Transparent Floor
Murphy Transparent Spar
Murphy Nogloss Interior
Murphy Semi-gloss Interior
Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

Murphy Varnish Company

Franklin Murphy, jr., President

Newark New Jersey

Chicago Illinois

Dougall Varnish Company, Ltd., Montreal, Canadian Associate

A N A

(Continued from page 86.)

it is so much quicker and easier to use a pencil, that I hardly ever use the typewriter for that purpose.

Now, I may be a back number and there may be such a machine on the market, but if such is the case I have not seen it advertised and I would like to be put in touch with the makers, and if there is not, then I wish you would bump some of them up and let's have one made before lumber bills go out of fashion.

Yours for efficiency,

F. E. KLINE, "Home Builder."



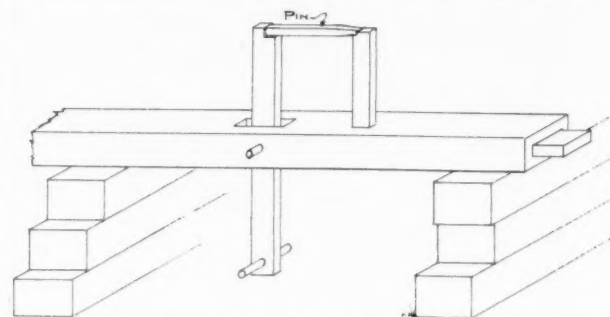
A Kin to the Shaving Horse

To the Editor:

Pomeroy, Ohio.

As I am an old timer and a charter member of the AMERICAN BUILDER family, I will try to answer the question asked by W. R. B., Yates City, Ill.

We used to take a post or any timber that had a mortise cut clear thru and lay it across some other timbers or on a



Shaving Horse Rigged Up On Any Heavy Timber with a Thru Mortise.

stump or anything to raise it up off the ground to form something like the old shaving horse as illustrated in the July number.

Then take a 2x4 and put it thru the mortise and put a pin thru the pin hole in the timber to let the 2x4 swing back and forward same as the head in the shaving horse, and put a pin in the bottom for a foot rest to work the head piece. Then put a piece of 2x3 or any shape the length of the pins you wish to make back from the 2x4 in the mortise; then cut a notch in the top of the 2x4 the size of a pin you wish to make at the big end, say 1 1/4 in.; then cut a notch in the other upright, say 3/4 in. or 5/8 in., whatever you wish to make the small end of the pin. With this kind of a pin horse you can make the pins the exact thickness you wish to make them for the notch in the top that holds. The pin acts as a gauge for thickness and the other notch acts as gauge for the small end and also the taper. We always made the pins octagon.

JOHN GENHEIMER.

NOTE: Mr. James Selby at Claysville, Pa., and Mr. R. Nail at Shelbyville, Ind., submitted practically the same thing in the way of a shaving horse, as the above.—EDITOR.



To Cut the Planceer for an Octagon Roof

To the Editor:

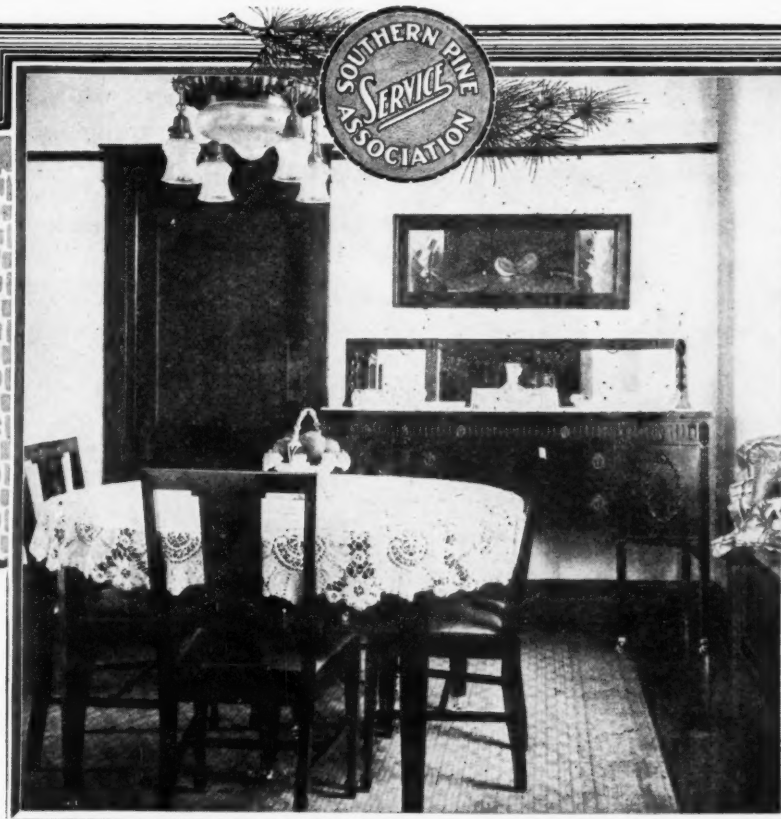
Laconia, N. Y.

What figures must I use on the square to cut the planceer for an octagon roof with a 1/4 pitch? BENTON S. PORTER.

Answer—Use the same figures that you would for the top cut of the jack but the cut is reversed on the square, that is, in this case 5 in. and 15 5-12 in. will give the cut for either the top cut of the jack or the cut across the face of the board for the planceer. In the former the cut will be on the side of the square on which the latter number is taken and the reverse for the latter. But there is still another cut that should be considered and that is the edge cut of the board which

(Continued to page 90.)

Infinite
Variety in
Tone or
Color May
Be Had



With the
Use of
Stains on
Southern
Pine

Economy in Interior Trim

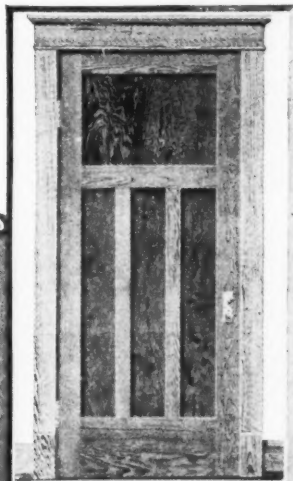
It is no longer necessary to expend large sums for rare and costly woods for the interior finish of your home.

Modern improvements in materials and methods now make it possible for you to obtain any desired effect of tone or color in interior trim with the use of the least expensive woods. This substantial saving does not necessitate any sacrifice of beauty or utility when the wood used is

Southern Pine

Curtis Millwork Co. Design

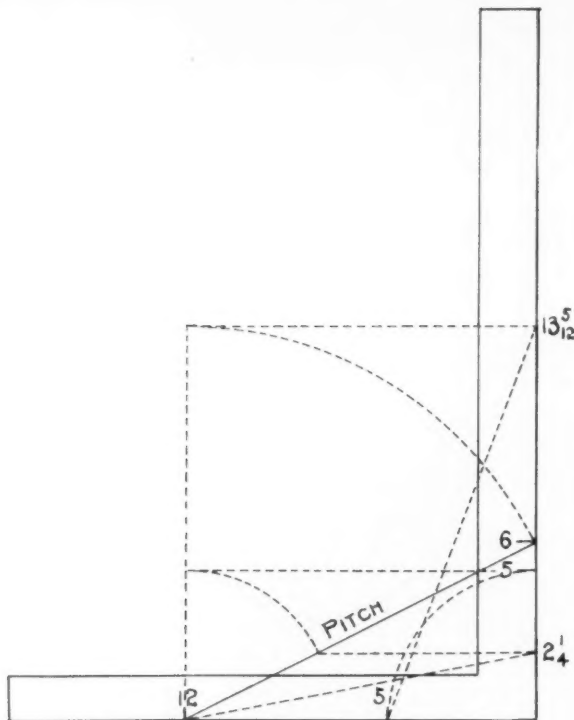
"The Wood of Service"



Southern Pine not only is exceptionally workable and durable, but it has a wonderfully varied and pleasing grain; and it takes and holds stains perfectly, making possible a wide range of color and tone effects in floors, standing trim and all interior woodwork. Furthermore, it costs less than any other high-class building wood, and it may be had anywhere east of the Rocky Mountains.

It will pay you to send for the new booklets, "The Interior of Your Home" and "Beauty Plus Service In Floors." They are Free. Please address Department N-52.

**Southern Pine
Association**
New Orleans, La.



How to Frame an Octagon Roof Planceer.

(Continued from page 88.)

is the same as the hopper cut. In this case it is 12 and $2\frac{1}{4}$ and the cut will be found on the latter. The accompanying illustration is about as simple a way as we know of to obtain this cut. 5 is used to work from because in this case 5 and

12 give the regular octagon miter (practically). We trust this is so simple that it needs no further illustration. This rule applies to other polygonal angles. A. W. Woods.



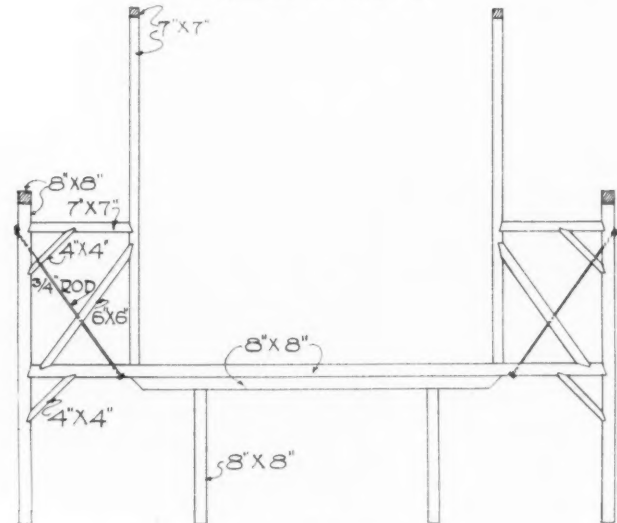
An Unusual Heavy Timber System

To the Editor:

Ashley, Ohio.

As I have never seen any photos of heavy timber barn frames, as we build them here, am sending you a photo of one I put up recently for Mr. O. L. Barlett, near Westfield,

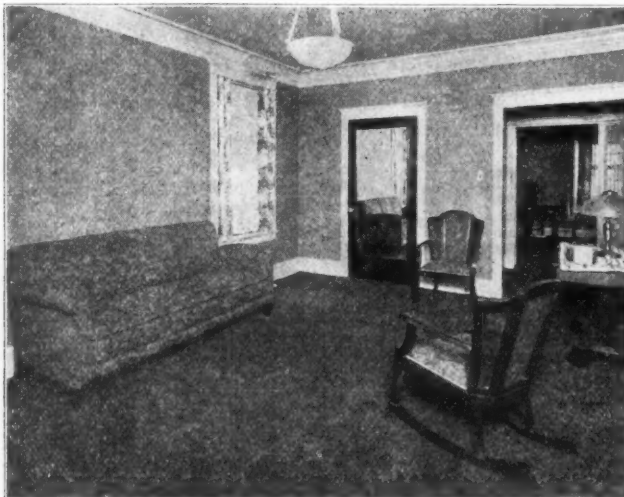
(Continued to page 92.)



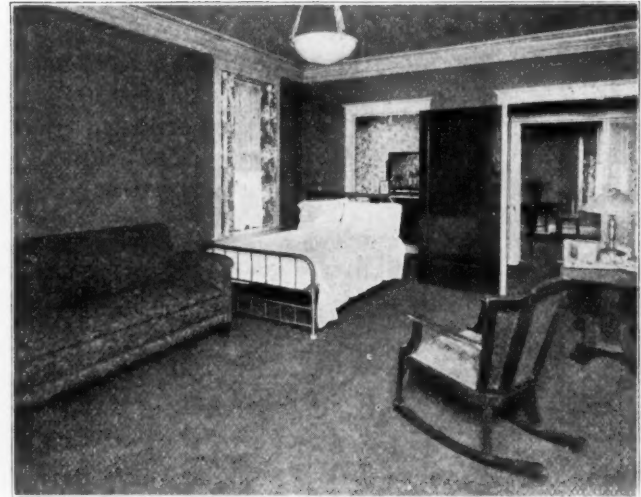
CROSS SECTION

Unusual System of Barn Bracing for Heavy Timber Frame
Illustrated on Page 92.

MURPHY IN-A-DOR BEDS



Perfect Living Room by Day



Perfect Bedroom by Night

Murphy In-A-Dor Beds

Reduce building costs from 20% to 40%.
Reduce housework.
Reduce coal bills.
Reduce light bills.
Reduce furniture bills.
Solve the servant problem.

This saving can be accomplished by eliminating one or more bedrooms and substituting for each bedroom a MURPHY-IN-A-DOR BED which is installed in an ordinary closet and concealed behind a door only three feet wide. If you are going to build our engineers will help you solve your problems. Any advice cheerfully given free.

Write nearest office for descriptive booklet

Murphy Door Bed Company

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830 Westminister Bldg.

Cleveland, Ohio
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St. Louis, Mo.
460 Chemical Bldg.

Kansas City, Mo.
390 Glendale Bldg.

Tulsa, Okla.
13 East Fifth Street

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

JOHNS-MANVILLE ASBESTOS ROOFING



The Macdonald Thresher Co.
Stratford, Ont., Canada
J. S. Russell, Arch., Stratford, Ont.

Practically Every Roof is a Prospect for You

The roofing dealer who can meet every roofing demand with a suitable and serviceable roof is the dealer who lands the big business. In the Johns-Manville Roofing Line there's a roof for practically every requirement—and each has distinct service and sales features.

Johns-Manville Asbestos Ready Roofing. A combination of Asbestos (Rock) Fibre and natural asphalts, this roofing is literally a sheet of flexible stone. Fire-resistant, time-defying, weatherproof—giving long years of service with minimum upkeep expense.

Johns-Manville Roofing Clamps, supplied with Ready Roofing, are strips of special alloy galvanized metal that exert continuous

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Johns-Manville Asbestos Shingles—made of selected Asbestos Fibre and Portland Cement—an armor for all time against the most severe action of the elements. Severe temperature changes, rain, sleet or snow have little or no effect on these shingles. And they *cannot* burn.

* * *

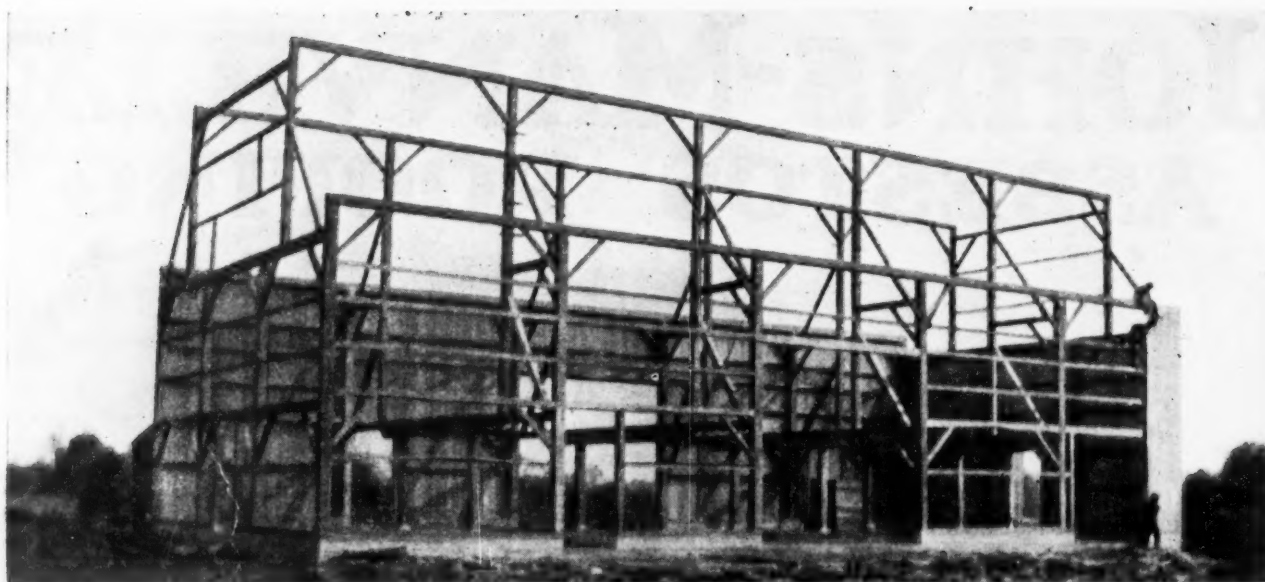
A Genuine Dealer Opportunity. The market for the Johns-Manville Line of Roofings lies at your very door. The farmer whose stock and equipment comprise his working capital needs the protection of a safe and durable roof for his big new barn. The new bank building, the business block, the hotel, church, school, warehouse or factory, each of these has a distinct need for just such a safe and economical roofing as Johns-Manville offers. And on each job there's both a dealer's and contractor's profit—why not make it yours?

We want a few builders in various parts of the country to handle Johns-Manville Roofings. We want men of good standing, able to make full use of the help we will give—men who measure up to the big possibilities of this profitable business.

If you're the right man, ask for further details, for our proposition will prove interesting.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 55 Large Cities





Photograph of Heavy Timber Barn Frame by Miller Davis Near Westfield, Ohio. Size 36 by 80 Feet, 20 Feet to Plate.

(Continued from page 90.)

Ohio. It is 36 by 80 with 20-foot side walls. Am also sending you rough sketch of framing of inner bents.



MILLER DAVIS.

How to Cut Hen House Rafters

To the Editor:

Freeport, Me.

Inclosed find a sketch of a hen house with posts in front 5 ft.-0 in. back 6 ft.-0 in. and at one-third of width of building back from the front is 7 ft.-0 in.

Under your method of cutting rafters how should the square be applied to get the lengths and cuts of the rafters?

J. B. SYDLEMAN.

Answer—The run and the rise will give the seat and plumb cuts just the same as in the even pitched roof, but each side must be treated separately. In this example, the front posts are 5 ft.-0 in. and at the comb it is 7 ft.-0 in., a difference of 2 ft.-0 in., which represents the rise given the roof for the front side for whatever the run may be. The rear posts

(Continued to page 94.)



Here's a big, profitable opportunity for contractors and builders everywhere. Don't worry about a building slump in your locality on account of the high cost of materials. Get busy on remodeling work. Rebuild frame houses into stucco. There are any number of people in your town that want to bring their old houses up to date and it's mighty profitable business for you.

North Western Expanded Metal Company

Member Associated Metal Lath Manufacturers

903 Old Colony Bldg.

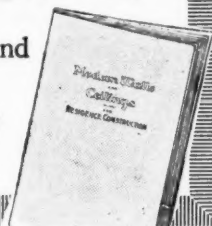
CHICAGO, ILL

Overcoat Old Houses and KEEP BUSY

Kno-Burn Corrugated Metal Lath

goes right on over the clapboards or sheathing and requires no studding. You simply put on the conveniently sized strips and apply the stucco—easy and certain to give a fine, smooth, permanent job.

We'll gladly post you fully. Send for booklet 32 at once.



ARKANSAS SOFT PINE

Satin-like Interior Trim

Has all the merits of other woods
you may have heretofore used for

White Enamel

together with pronounced indi-
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*Our new painting and
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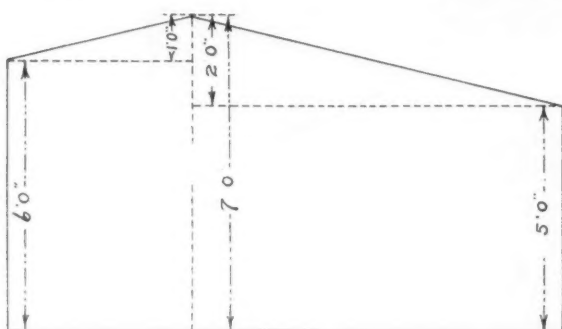


Putting on the New Roof on Paul Klein's Lumber Yard Shed at Iola, Kans. A Half Acre Job.

(Continued from page 92.)

being 6 ft.-0 in. high leaves a rise of 1 ft.-0 in. for that side of the roof for whatever its run may be. As for the length of the rafters proceed in the usual way as for any other common rafter.

A. W. Woods.



Dimensioned Diagram of Hen House.

Big Lumber Shed Roofing Job

To the Editor:

Iola, Kan.

I am sending a picture of a roof covered with "Vulcanite" roofing of "Jumbo" type. There is a little less than one-half acre of roofing or 195 rolls of paper.

I am at extreme right of picture. I am learning the carpenter trade under my father, who is a contractor and builder in Iola, Kan. The roof is on a lumber yard shed owned by Paul Klein.

E. R. GEERY.

Plank Truss for Barns

To the Editor:

LaFargeville, N. Y.

In answer to question of C. Kolkind in July issue: In regard to plank truss for barns, the illustration he gives shows how to build the truss. The braces which run up to the purlins are double, one each side of the 2x12 principal rafter which goes from plate to peak. The posts are double as are also the short struts from purlin to principal rafter.

(Continued to page 96.)

"Why Black Rock Wallboard makes money for me"

"There is never any 'come back' when I use Black Rock Wallboard on a job. It not only looks well, but stands up well; and I can trace many new customers to the satisfactory Black Rock jobs I have built."

CONTRACTOR
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A builder's profits in the long run, depend not merely on how the job looks when it is finished, but how it "stands up." Black Rock is veneer built of the stuff that lasts. It is so well sized that no priming coat of paint is necessary.

You will find Black Rock Wallboard not only as easy to handle and as enduring as lumber, but surprisingly economical as well. Let us send you a sample for your careful examination.

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Mail This COUPON Today

The Black Rock Wallboard Co.,
1510 Ontario Pl., Black Rock, N.Y.
Please send me stock
sample of Black Rock Wall-
board and booklet showing
Black Rock jobs.

Signed.....
(Your name)

.....
(Your address)



Steady Work Without a Break

When Beaver Boarding fills the gap you have steady work from frame work to finishing. No need to carry tools to another job or lose time waiting for lathing to be done and plaster to dry.

You have steady work without a break.

More than that the job is right. There is no chance of cracking and falling. The walls and ceilings are just as permanent as the woodwork and hardwood floors. This knotless, crackless, manufactured lumber is a staple among building materials.

Just because some people think all wall board is Beaver Board don't expect Beaver Board results from anything but the genuine.

Send the plans of your next job to our Department of Design and Decoration and let us help you with suggestions and estimates. This service is free to carpenters and contractors.

THE BEAVER BOARD COMPANIES

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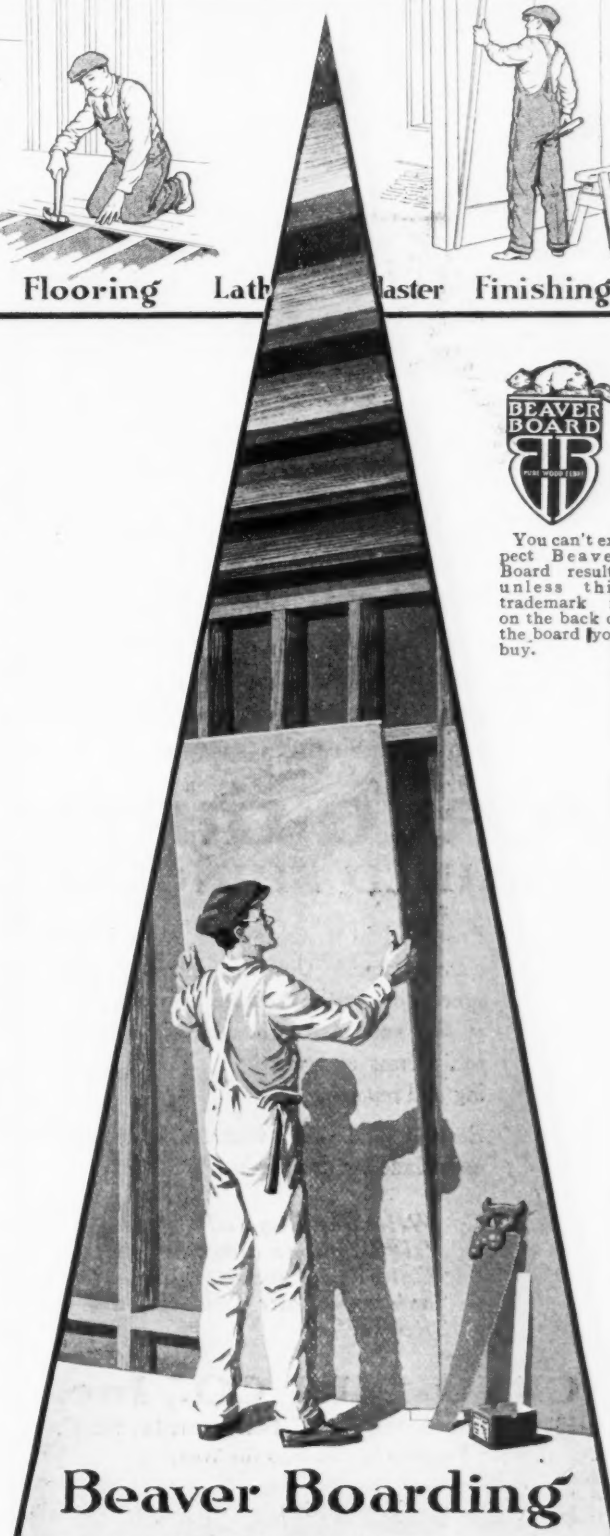
Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, San Francisco

Manufacturers also of Beaver Greenboard and Beaver Blackboard

Distributors in principal cities. Dealers everywhere.



You can't expect Beaver Board results unless this trademark is on the back of the board you buy.



Beaver Boarding

BEAVER BOARD

FOR BETTER WALLS & CEILINGS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Architect, Chas. A. Platt, New York City, for Richard C. Plater, Nashville, Tenn. 24-inch "DIXIE WHITE" CREO-DIPT Stained Shingles on sides. 16" moss green "CREO-DIPT" Stained Shingles on roof.

WE pride ourselves in producing quality shingles—stained in lasting, uniform colors. Shingles that will enable you to create more beautiful homes and save the untidy annoyance of staining on the job. For economical results specify

"CREO-DIPT" STAINED SHINGLES

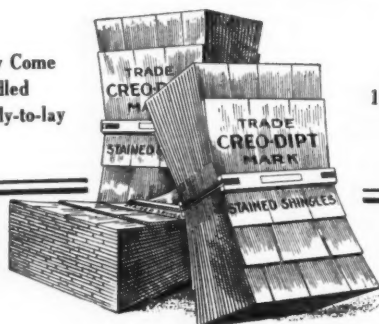
Preserved in creosote and stained any color desired. Our own special factory process drives the creosote into the pores of the wood. A protection against dry rot, worms and weather. Save repainting and repairs.

Easy to handle—no waste. Do not curl up or fade out in streaks.

Write for Book of CREO-DIPT Homes and Sample Colors on wood. Also ask about our "Thatched Roofs."

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Factory in Chicago for West

They Come
Bundled
Ready-to-lay



17 Grades
16, 18, 24-inch
30 Colors

(Continued from page 94.)

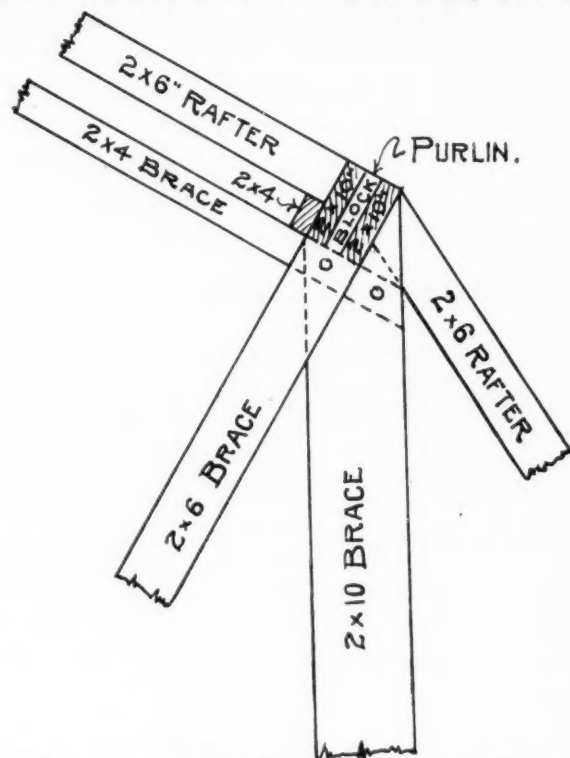
The space for the purlin is left vacant. I think that the brace from peak to purlin should be lower at the low end so that it will pass between the long braces and also between the struts, thus tying these together, and being below the purlin it will serve to support this: see illustration.

If one will examine a few designs of trusses he will see that this brace is not an important member as it is sometimes left out and one stick put in horizontally to take the place of it and of the strut as well, and so we conclude that it is more important that a design be workable than it conforms to some theoretical drawing.

The purlin may be two 2x10 planks with blocks between, making 6x10-inch sections.

After the joists are laid a floor is laid on them to make a place for building the trusses.

When the first truss is completed the other trusses are to be built exactly like it, one on top of the other, and when all have been finished the first is placed in position at one end of the barn. Place the feet of the truss where they are to rest



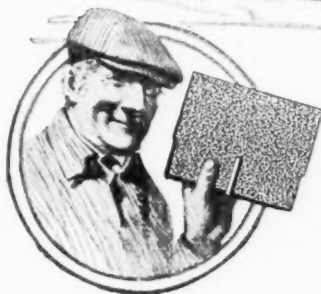
Detail of Gambrel Joint in Plank Framing Method Advocated by John Upton.

in position with the top of the truss toward the center of the barn. Blocks are then spiked to the joints at the upper points, so as to keep the feet of the truss in place while being raised, said feet resting against these blocks and pivoting on them.

A pair of shears is erected at the end of the barn in the center, leaning at an angle of 45 degrees toward the center of the barn; the black and tackle is rigged, the rope passing over the shears and attached to the upper part of the truss.

A gang of men can do the work but horse power is cheaper. A few men with guy ropes are necessary to steady the truss while being raised and to keep it from going too far. It may be found best to use a team to start the truss and lift it part way up, then men may pull it the rest of the way easily and safely. As soon as the first truss is up it is braced in position. The second is then raised in like manner and as soon as it is up the girts are added. Then one after another the trusses are put in place, spiking the girts as you

(Continued to page 98.)



Now I'm Reroofing My Town

My first NEPONSET roof was the envy of the neighborhood. It added tone to the building. Many thought it slate. They asked me about it. Found out it was spark-proof, a wonder in wear and economical in laying. They saw samples in soft green and red colors.

NEPONSET TWIN SHINGLES

Asphalt, Slate-Surfaced, Fire-Resisting

(Patent Applied for)



Look for this trademark on all Shingles, Roll Roofings, Wall Boards and Building Papers. There is one meeting every requirement and purse—all guaranteed by us.

Large national advertising kept the subject in their minds. Page advertisements explained the beauty, wear, safety, and saving in Neponset.

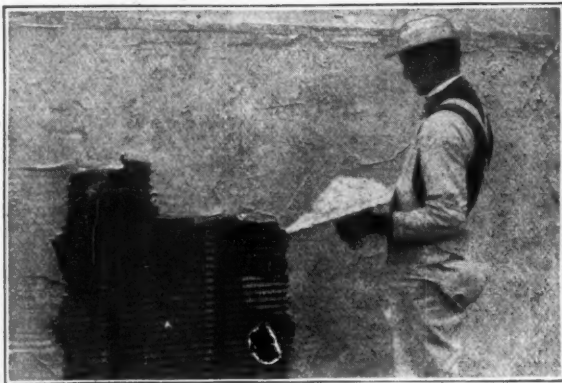
Orders came in fast. They have kept on coming, for every Neponset roof has given real satisfaction. Those Neponset Twin Shingles are impregnated with everlasting asphalt and coated with crushed slate jammed right into the fibre.

Send for full information on Neponset Building Products and the free booklet, "Repairing and Building"

BIRD & SON (Est. 1795) Dept. C, East Walpole, Mass.

New York Chicago Washington

Canadian Office and Plant: Hamilton, Ontario



Plastering Rib Lath
Note heavy scratch coat, due entirely to stiffness of Rib Lath

No More Cracked and Streaked Plaster

Contractors everywhere are finding that the use of Hy-Rib and Rib Lath products prevents cracked and streaked plaster. Wood lath absorbs moisture, expands and causes the plaster to crack and streak. Our metal lath does away with this trouble.

Use **Hy-Rib** and **Rib Lath**—and you save forms, stiffening channels and labor. Two coats of plaster can be used instead of three. This metal lath is so stiff and rigid that supports may be placed a greater distance apart, saving in the cost of supports and labor in installation. Moreover, it provides a **permanent, fire-proof** construction.



Hy-Rib furnished in four depths of ribs and various gauges

HY-RIB

A steel sheathing, stiffened by rigid deep ribs. Manufactured from a single sheet of steel its use is decidedly simple. The easily handled sheets are fastened to the supports and the plaster or concrete applied. No forms, stiffening channels nor wiring required.

Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc.

Write today for free copy of Hy-Rib Handbook, containing specifications, tables, illustrations, etc. Address Dept. H-44.

Trussed Concrete Steel Co.
YOUNGSTOWN, OHIO
Representatives in Principal Cities

RIB LATH

A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and prevents cracking or streaking of plaster. Saves time, labor and material in erection.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 96.)

go along. No scaffold is needed to put on the plates as you can climb the truss.

To put the purlins in place raise to a position with block and tackle. For this a 2x4 can be spiked to the brace and principal rafter and later sawed off.

Siding is nailed on before rafter and roof boards are in place there being nothing to interfere with nailing on the boards under the cornice.

If desired the purlins can be made in parts several feet long and raised by pulley up over the main plate.

JOHN UPTON.

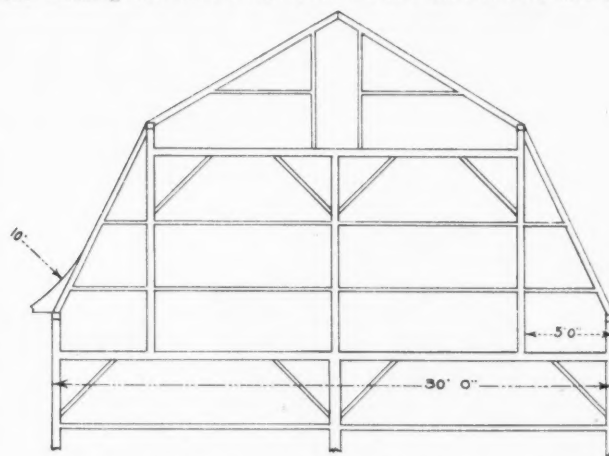


Proportion for Heavy Timber Gambrel

To the Editor:

North Cohocton, N. Y.

In a recent issue of the AMERICAN BUILDER, a brother asks if there is a rule to frame a gambrel roof. I am sending a sketch showing the method that has been used in this section for years. The rule is to set the purlin in 1/6 the width of the building and with a rise of 12 in. to 6 in. run or 6 and 12



End Framing for Heavy Timber Barn Showing Properties.

reverse and with upper 7 in. to 12 in. This will make the upper rafters a little longer than the lower ones but it gives a good shaped roof.

Have also shown the usual method of finishing at eaves by running up from top of fascia 3 ft.-0 in. to 3 ft.-6 in. of rafter with a 10 ft.-0 in. radius. These pieces are cut out of inch stuff and nailed on to the side of the rafter. Some times we use straight lookouts instead of the curved.

W. T. MILLER,
Contractor and Builder.



How to Read Essex Board Measure

To the Editor:

Rockwood, Pa.

I would like to have an explanation to the "Essex Board Measure Rule" found on the body of some steel squares.

SIMPSON S. SHAFER.

Answer—The Essex board measure has been stamped on most all of the steel squares for these many years. The fact that it has not become generally known by the men for whom it was intended shows it to be of but little importance. In fact, we cannot now after more than thirty years' experience among builders, recall a single instance where we saw this board measure referred to.

Yet it is simple and easy to learn and is as follows: Always look under 12 on the blade for the length of the board and move to a point under the desired width and the figures recorded there represent the contents of the board in feet and inches in lineal board measure. Thus, a board nine feet long and nine inches wide contains six feet and nine inches or six and three-quarters board feet.

A. W. WOODS.

The ENDORSEMENT *of* RED CEDAR SHINGLES IS ON THE HOUSETOPS *of the* NATION



There they stand, Beautiful Homes, years and years they live, their Beauty Unfading, their durability unquestioned, lasting for generations.

DURABILITY—UNCHANGING ARCHITECTURAL BEAUTY

These are the outstanding qualities of the structures built of Red Cedar Shingles. A workmanlike building and a building architecturally beautiful **at the beginning AND ALWAYS.** Do them justice in the laying—with good workmanship, good old-fashioned cut nails or zinc-coated nails (never wire nails) you have a Roof or Siding that **WILL LAST FORTY YEARS AND MORE.**

A Guarantee of Grade and Quality

The Rite-Grade Inspection Mark appears on only such shingles as in every way conform to the rigid specifications of the West Coast Lumbermen's Association. When you buy **INSIST** on the Mark being on each bundle.

Below (in the left-hand corner) is the identification mark of all Red Cedar Shingles that pass inspection.

FREE—Write for the following literature, for one or all, address below:

(1) **Sample Shingle**—An actual piece of Red Cedar, showing what a fine piece of building material it is. (2) **Farm Building**—Very useful facts in this book. (3) **Bungalow Book**—Twelve pretty designs with floor plans. (4) **Distinctive Homes**—Twelve fine residences with floor plans. (5) **Report of the University of Washington** giving results of tests on the comparative fire resistance of roofing materials.



Shingle Branch, West Coast Lumbermen's Association
SEATTLE 426 Henry Building WASHINGTON





PROTECTS THE GLASS FROM JARS

To set big plates for a Store Front is a *difficult* matter. The operation in itself requires skill and every precaution must be taken to prevent breakage.

Yet—the most important thing, by far, is to set the glass in a construction that will at *all* times adequately protect the glass from injurious jars, shocks and vibrations which, in many instances, may prove disastrous and result in cracked plates.

Kawneer Store Front Construction affords the most *ideal* metal setting for large plate glass. The Glass is securely held by means of a *spring friction grip*, being *resilient on both sides* of the glass thus protecting the glass from undue strain.

Just take a look at the above illustration, which plainly shows the advantage of our *resilient grip*; then *imagine* glass held in an unyielding, *vise-like* grip of iron, for instance, or perhaps of wood, which will always warp or swell.

Kawneer Store Front Construction is designed for *one* purpose only, that of holding glass *efficiently*, but above everything—*safely*.

Our Catalog "H" contains details of our store front construction. Perhaps you would like a copy, if so, just mail us the coupon and it will cheerfully be sent you.

KAWNEER MANUFACTURING COMPANY
NILES, MICHIGAN

PIN THIS COUPON TO YOUR LETTERHEAD

*Please send me a
copy of Catalog H*

Striking Out An Ellipse

To the Editor:

Norwich, Conn.

How many mechanics are there who can strike out a perfect ellipse if given the desired diameters? Very few. Those who could do it, very likely would make a complicated job out of it. In a certain Connecticut wood-working shop many elliptical window frames were made. One of the men had a very unique method for striking out the correct shape and size without using any special tools.

Suppose for example an ellipse having diameters of 72 inches and 24 inches is required. Refer to Fig 1. On the top of bench and at right angles to the front edge, nail a strip of $\frac{7}{8}$ -inch board. This board must have a straight edge to work from. Cut a thin strip of wood $\frac{1}{4}$ inch thick and shape as in Fig. 2. The end at O, have about $1\frac{1}{2}$ inches deep; the end at P, about 1 inch deep. The longest diameter of the ellipse is to be 72 inches, so the distance from O to N must be half of 72, or 36 inches. The shortest diameter is to be 24 inches,

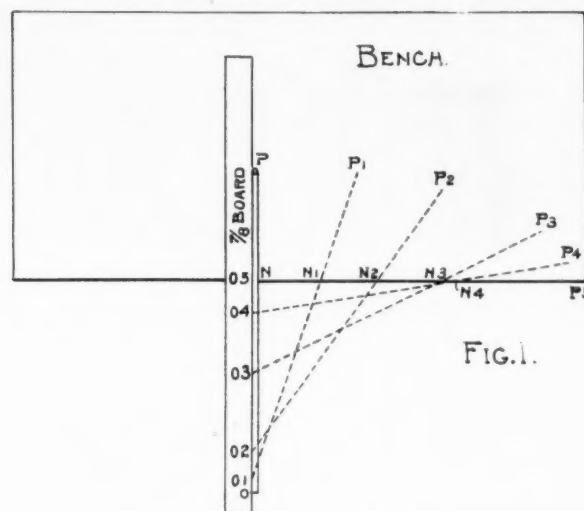
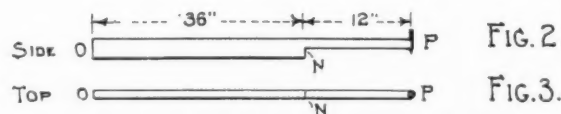


FIG. 1.



Apparatus and Method for Striking an Ellipse.

so length from N to P must be half of 24, or 12 inches. Stick O-P therefore is 48 inches over all. At end of P, cut a notch for a pencil or marker.

To operate, refer to Fig 1. Stock O-P is pressed against the $\frac{7}{8}$ -inch board with the notch at N fitting up tight to outer edge of bench. Keeping end O against $\frac{7}{8}$ -inch board, swing end P to right but always have notch N in contact with edge of bench. This will cause end O to slide up along edge of $\frac{7}{8}$ -inch board. The stick O-P will assume positions such as shown in dotted lines, and the pencil will travel through points P1, P2, P3, etc. When the pencil reaches P5, the path traveled is a perfect quarter of an ellipse.

With a quarter of the ellipse for a pattern, it is an easy matter to mark out the remaining three quarters.



GEORGE S. BROWN.

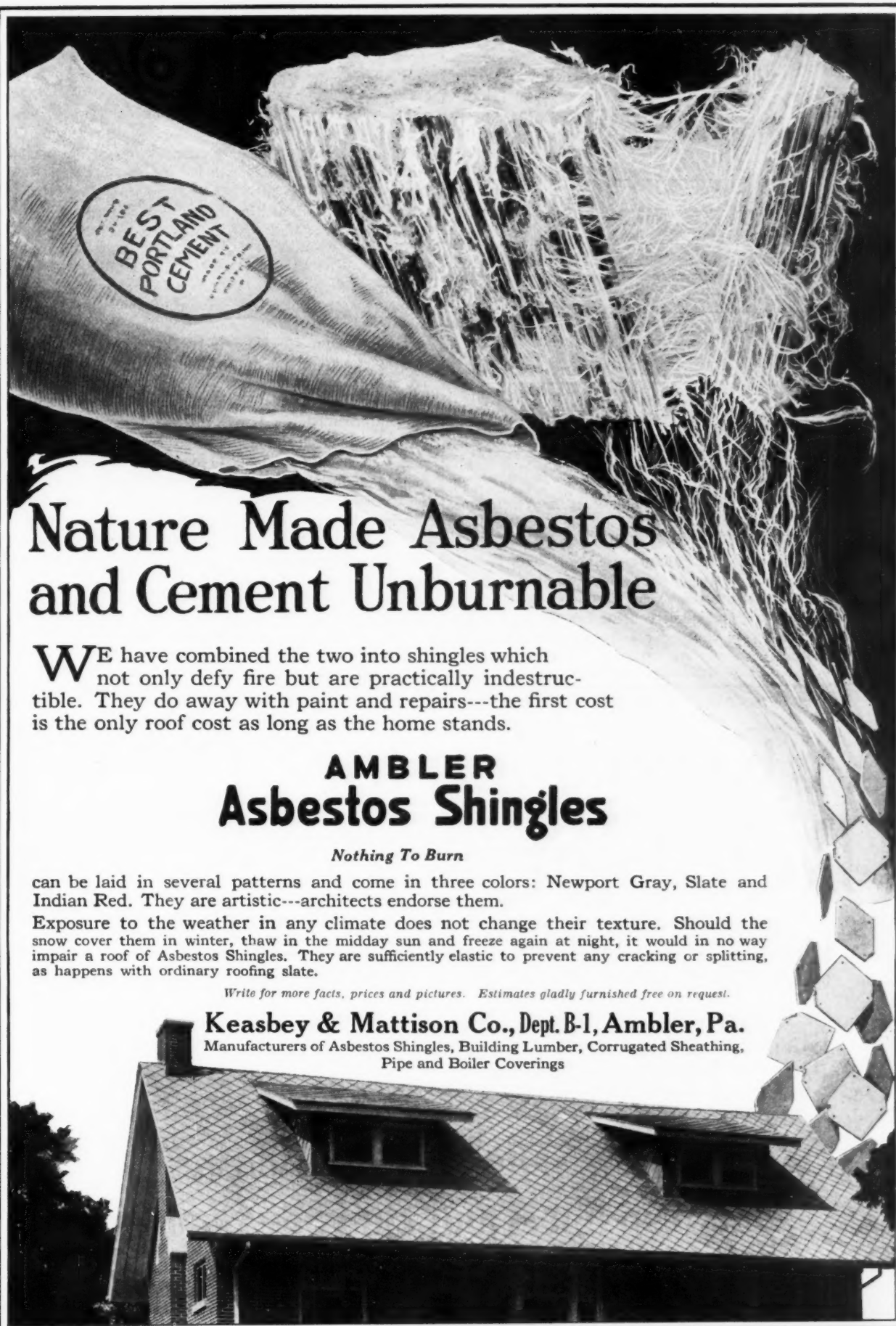
Wants to Make Band Saw Sharpener

To the Editor:

Calgary, Alta., Canada.

I would like a sketch of a home made, or easily made band-saw sharpening machine that I could run off on our little motor in the shop. I would like it practical and simple so that I could make nearly every part myself with the machinery we have. You could publish this question and I will probably have a few answers from some of my brother carpenters.

WILLIAM DEANS.



**Nature Made Asbestos
and Cement Unburnable**

WE have combined the two into shingles which not only defy fire but are practically indestructible. They do away with paint and repairs---the first cost is the only roof cost as long as the home stands.

**AMBLER
Asbestos Shingles**

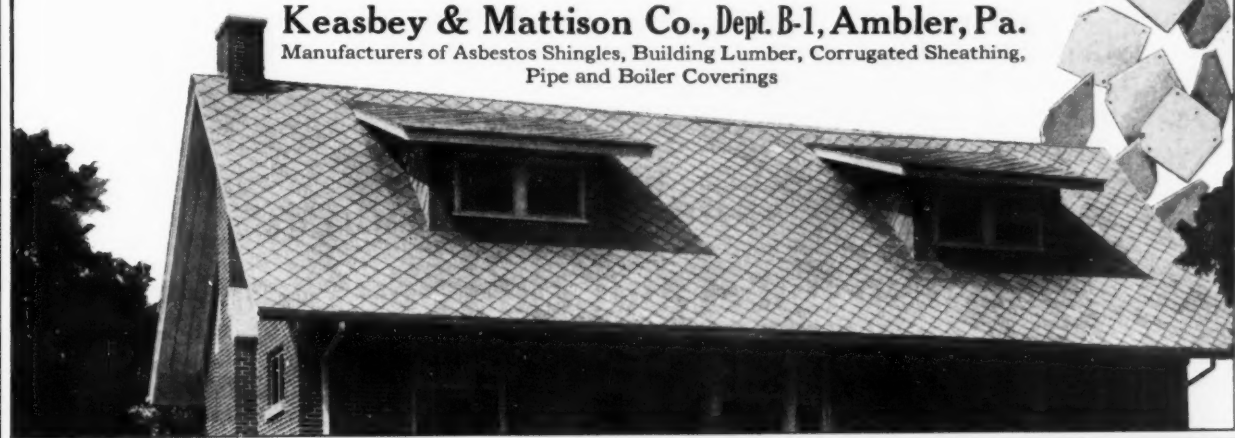
Nothing To Burn

can be laid in several patterns and come in three colors: Newport Gray, Slate and Indian Red. They are artistic---architects endorse them.

Exposure to the weather in any climate does not change their texture. Should the snow cover them in winter, thaw in the midday sun and freeze again at night, it would in no way impair a roof of Asbestos Shingles. They are sufficiently elastic to prevent any cracking or splitting, as happens with ordinary roofing slate.

Write for more facts, prices and pictures. Estimates gladly furnished free on request.

Keasbey & Mattison Co., Dept. B-1, Ambler, Pa.
Manufacturers of Asbestos Shingles, Building Lumber, Corrugated Sheathing,
Pipe and Boiler Coverings

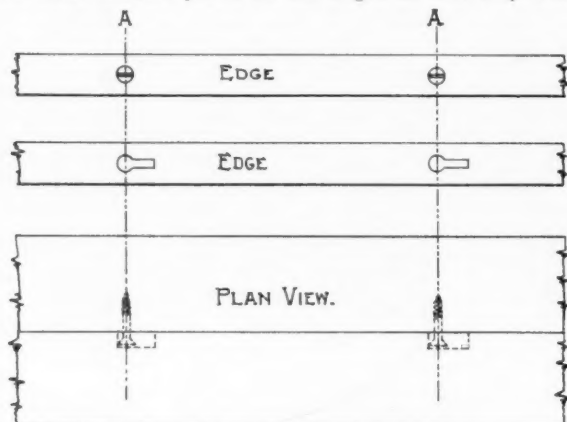


To Join Boards Together

To the Editor:

Montrose, Pa.

I am enclosing sketch that I thought might help some brother "wood butcher." This I find is a good way to put two pieces of wood together, as for moulding boards, drawing boards, etc. Joint the two edges that are to go together, then mark off two places on the edges so that they will be



Scheme for Joining Boards Together.

square with each other (see sketch at lines A A). In one edge at center of lines set screws, leaving the heads projecting about $\frac{1}{2}$ -inch. In the edge of the other board, bore holes $\frac{1}{16}$ -inch larger than the screw heads and $\frac{5}{8}$ -inch deep. Cut slots a trifle larger than the neck of the screw. Place the piece with the screws in, in the vise, glue both edges, and place the slotted piece down on the heads with the holes covering same and drive end ways so as to bring the screw heads in the slot cut for some. LEE C. BROWN.

Help on Some Finishing Problems

To the Editor:

Mayaguez, P. R.

Having seen in the last number of the AMERICAN BUILDER your offer of the service of a consulting chemist, and having great difficulties in the preparation and application of varnishes, I take the liberty of consulting with you on some of the main points.

I have been using varnish made by dissolving shellac in denatured alcohol, and find that mainly when I use bleached shellac, most of it does not dissolve. When I apply this varnish with the brush, instead of leaving a smooth surface it makes corrugations.

Since my business is furniture, and since hand labor is rising rapidly, I have been thinking to substitute the method of varnishing by hand for a more rapid and efficient one. I would be glad to hear from you on this matter.

JOSE BERROCAL.

Answer—Your letter to the AMERICAN BUILDER has been referred to me for reply. My work in factory engineering has brought me into contact with the identical problems now troubling you, so that I am glad to be able to offer you first hand information.

It is a peculiarity of bleached shellac, after storage, that it becomes partially insoluble in denatured alcohol. To overcome this difficulty I have found that it is necessary to treat the shellac with ether, such as is used in the hospitals. Obtain a large, wide-mouthed glass jar or bottle which can be closed securely. Since shellac should be cut at the rate of three pounds to the gallon of alcohol, place this amount of gum in the jar, add one-half cup of ether and quickly seal the bottle. Shake the jar occasionally until the shellac swells into a thick jelly. When it has reached this state, it can be readily dissolved in the alcohol. If you cut any great amount

(Continued to page 104.)

A Reputation for Reliability—



has followed *Keystone Copper Steel* ever since it was first placed upon the market. Its excellence was proved in actual service before we offered this alloy material for Black and Galvanized Sheets and Roofing Tin Plates.

Apollo-Keystone Galvanized is without a peer for Cornices, Spouting, Roofing, Etc.

Look for the special Keystone mark added to regular brands. Shall we send Keystone booklets showing series of interesting weather tests?

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



On houses like these—

Con-Ser-Tex Canvas Roofing

Is the ideal material to use for

**The porch floors and roofs—on the sleeping balconies
—as a lining for the gutter—as a covering for val-
leys and hips it's most satisfactory, a most durable
flashing.**

*See description of these two houses on pages 47 and 49 of the
Editorial Section*

CON-SER-TEX is a specially prepared heavy cotton fabric chemically treated so that it will not crack, stretch, peel, shrink, rot or leak. It's easy to lay—saves, time, money, trouble. It makes a neat, smooth, durable surface which will last as long as the house itself.

Send for our booklet—"Roofing Facts and Figures." It's FREE and gives interesting information about the many uses of CON-SER-TEX—and how you can save money by using it.

William L. Barrell Company

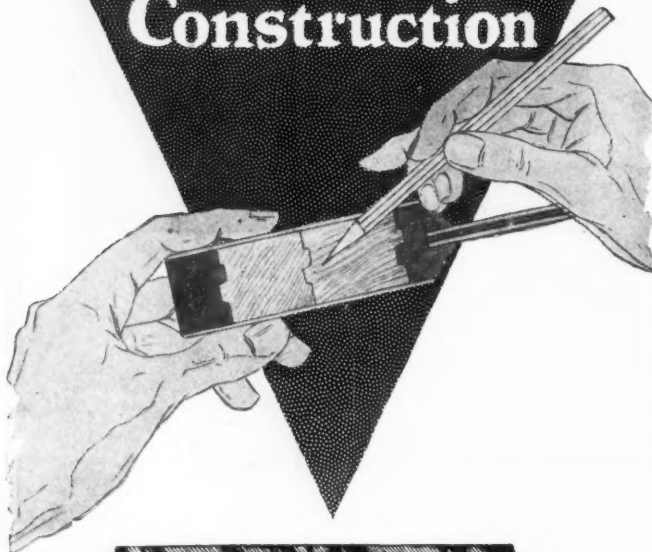
8 Thomas Street, New York City

Chicago Distributor: Geo. B. Carpenter & Co., 430-40 Wells Street

California Distributors: Waterhouse & Price Co., Los Angeles

The Pacific Building Material Co., San Francisco

You Can Point With Pride to the Details of Morgan Door Construction



Doors Reflect Your Good Judgment and Appreciation of Perfection

Wedge-Dowel Construction—All White Pine Core—the rare Beauty of their Veneers—and the wide choice of Distinctive Designs—make the MORGAN Line *supreme*. As a business-building proposition it is one which no contractor can ignore.

There isn't a detail, from the designing to the completion of MORGAN Doors, that falls short of perfection. You can point with pride to every part, because every part represents the utmost in quality, service and value. Furthermore, the strong MORGAN Guarantee insures you against all "come-backs" or dissatisfaction.

Get Your Copy of the Morgan Millwork Hand Book

With this on your desk you will have a complete knowledge of MORGAN Products always within easy reach. *Write for your copy today.*

MORGAN SASH & DOOR COMPANY
Dept. C-76, Chicago, U. S. A.

Morgan Co., Oshkosh, Wisconsin
Morgan Millwork Co., Baltimore

(Continued from page 102.)

of shellac, it will be an economy to make or buy some form of barrel churn which can be rotated. With this you can bring shellac into solution much quicker than otherwise.

As regards your trouble with the shellac piling up under the brush and causing corrugations, I will say that you do not use sufficient alcohol to reduce or thin your shellac before brushing out. In order to obtain smooth shellac work the material should be as thin as skim milk, and each coat should not be rushed any more than absolutely necessary. Never go over a piece of freshly shellaced work to touch up any spots that the brush may have missed. The only way to do is to let the first dry and afterwards give a second sanding with 00 sandpaper between coats. Three hours is sufficient time between coats. Personally, I do not like to get a good body to the finish with shellac, but prefer to use a thin coat merely as size; sandpaper; fill where necessary; and give enough coats of the proper varnish to allow rubbing down to a perfect surface. Another mistake many finishers make in the use of shellac, lies in the method of brushing. This brush must be well filled with the material and brought in a clean, smooth sweep over the work, moving with the grain of the wood and not across it. For turned or carved work the brush should be quite dry and moved in short, quick strokes in such a manner as to prevent drips or sags, and bubbles. If the room is warmer than 75 degrees F. bubbles will form easily under the brush. Work at about 70 degrees F.

Since my business calls for the constant study of new machinery and new methods of work, I am sending you two letters which I have had on file for the past year. I am fully acquainted with the Aeron System for finishing with shellac, varnish or lacquer. This machine has reduced our finishing force from forty men to nine, with a product much improved; put thru the factory in less time; and has enabled us to practice shading and other effects quite impossible with brush work. I cannot emphasize too strongly the value of this apparatus. It can be easily installed, and any man of average finishing room intelligence can be taught to use it. The manufacturer will make any arrangement of apparatus to suit your requirements.

The rubbing machine at first thought will seem rather expensive, but when you consider that it will replace four or more men at hand rubbing, and do better work in far less time, I think you will readily appreciate that it can be made to pay for itself in a short time, depending on the amount of use it will have.

I shall be pleased to hear from you after you have had an opportunity to try these ideas. RALPH G. WARING.

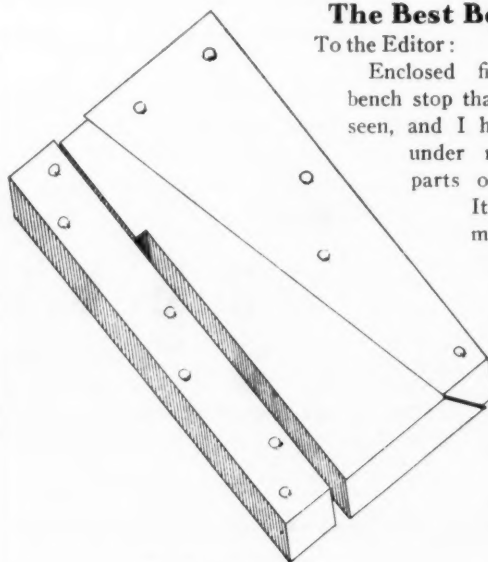
✦ The Best Bench Stop

To the Editor: Denver, Colo.

Enclosed find the best bench stop that I have ever seen, and I have had men under me from all parts of the U. S.

It should be made of oak of 7/8-in. material and of the proportions shown. If carefully made, well dressed up, and with the dove-tailed edge bees waxed

(Continued to page 108.)



Mr. Gates' Bench Stop.



Proof against sparks and fumes

Any roof should be *waterproof*
RU-BER-OID is more: It is

SPARKPROOF ROTPROOF
WATERPROOF HEATPROOF
RUSTPROOF COLDPROOF

The Wheeling Iron and Steel Company, Wheeling, W. Va., states:

"On our new tinning department, warehouse and machine shop buildings, having more than 60,000 square feet of roof area, we used RU-BER-OID Roofing exclusively. Experience has proved to us that RU-BER-OID is not injured by fumes, gases or smoke, that it resists fire, and extremes of heat and cold, and that it gives longer service without repairs."

Though RU-BER-OID costs a trifle more than other prepared roofing, it will save you money in the end.

Made in Slate Gray, Tile Red and Copper Green. Your dealer will show you samples and quote you prices.

THE STANDARD PAINT CO.
587 Woolworth Building, New York
BOSTON CHICAGO

Also makers of Ru-ber-oid Shingles and
Impervite Waterproofing for Concrete

The Paraffine Paint Co., San Francisco, (Under License)
The Standard Paint Co. of Canada, Limited, Montreal

Building Suggestions

Any books you check on this list will be sent you free. Write your name and address in the margin and state what kind of building you are planning.

- ☐ Roofing a Home
- ☐ Building a Poultry House
- ☐ Building a Bungalow
- ☐ Building a Barn
- ☐ Building Your Own Garage
- ☐ Covering Your Factory
- ☐ Artistic Roofs
- ☐ Waterproof Cellars and Stucco



Pronounced "RU" as in RUBY
RU-BER-OID
ROOFING
COSTS MORE - WEARS LONGER

MADE BY THE STANDARD PAINT COMPANY, NEW YORK, BOSTON, CHICAGO

Look for the "Ru-ber-old Man" on every roll of genuine Ru-ber-old

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

MIDLAND



For Stores

Let folks know
that you are alive
and wide awake
by building with

TERRA COTTA

Midland Terra Cotta Co.

1515 Lumber Exchange, Chicago



TERRA COTTA

For Banks

Never is prominence
so well combined with
dignity as in a build-
ing trimmed with

TERRA COTTA

Midland Terra Cotta Co.

1515 Lumber Exchange, Chicago



(Continued from page 104.)

when first put in operation, you will find that it will hold anything from an O. G. window stop to a 2x4 and hold it rigidly on edge. Simply push your piece in place, and the wedge will automatically grip and hold. To loosen, merely pull the piece to you, and it will automatically release and leave the stop set for the next piece. The piece that is ripped out should not be over 5/16 in. wide for as thin material as window stop.

CHAS. M. GATES, Architect.



Which Way Should He Lay the Grain?

To the Editor:

Salina, Kan.

I would like to ask the following question, which has come up in our bunch several times: Is it best to lay valley shingles with grain of shingle parallel with valley, or with common shingle? and why? I contend with the common shingle, to avoid nailing edge in valley and to avoid weather checks crossways from the valley.

Would like to see answer in the BUILDER from some of the carpenter folks.

A. F. AIMES.



The Facts on Hydrated Lime

Have you a definite knowledge as to the history, manufacture and uses of hydrated lime? Probably not unless you have very recently been so fortunate as to come into contact with a copy of Dr. E. W. Lazell's work on Hydrated Lime. This book fills an urgent need which has been stimulated by the rapid advances made in the industry during recent years. Especially is this work to be commended on its treatment of the use of hydrated lime in concrete, which has only very recently come to be a subject of serious consideration.

Thru the pages of well arranged and very clearly worded reading matter are distributed a generous number of photographic illustrations, diagrams and tables. Not only is a fund of valuable information offered, but it is compiled in such a comprehensible manner that the interest of the reader is at no time forced.

An interesting bit of history relative to the early uses of mortar for plastering and binding the joints in stone structures is included in the opening pages. The second chapter deals with the chemistry involved in the entire "lime cycle" which is forcefully explained in a diagram showing the sequence of the changes produced by burning, slaking and hardening, which carries the material thru a complete cycle leaving it in its original carbonate form.

A chapter is devoted to the classification of lime, including a discussion of its origin; classes of limestone; composition of limestone; definition of lime; types of lime; building trades classification of lime, and the classification of limes as fat, lean or hydraulic.

Chapter IV traces the history of the lime kiln down to the modern producer gas kiln, the steps being clearly marked by the use of diagrams. Following this chapter is a discussion of the slaking of lime, the process being explained carefully, and the need of a lime which has been slaked some time before using is shown to exist if a good, sound, smooth working lime paste is desired.

Readers of the AMERICAN BUILDER who are interested in construction work involving the possible use of hydrated lime will be satisfied with the very small investment required to obtain a copy of this work. The book is being distributed by the Hydrated Lime Bureau of the National Lime Manufacturers' Association, Arrott Building, Pittsburgh, Pa., at thirty cents per copy.

A New Ceresit Product

Cem-bric Covering Compound

A waterproof, decorative coating for brick, cement, stucco and concrete surfaces and concrete floors. Cem-bric Covering Compound is a special paint with a perfect affinity for brick and cement. Cem-bric is made in ten colors—white, cement gray, French gray, dark gray, tile green, cream, tan, buff, terra cotta and tile red.

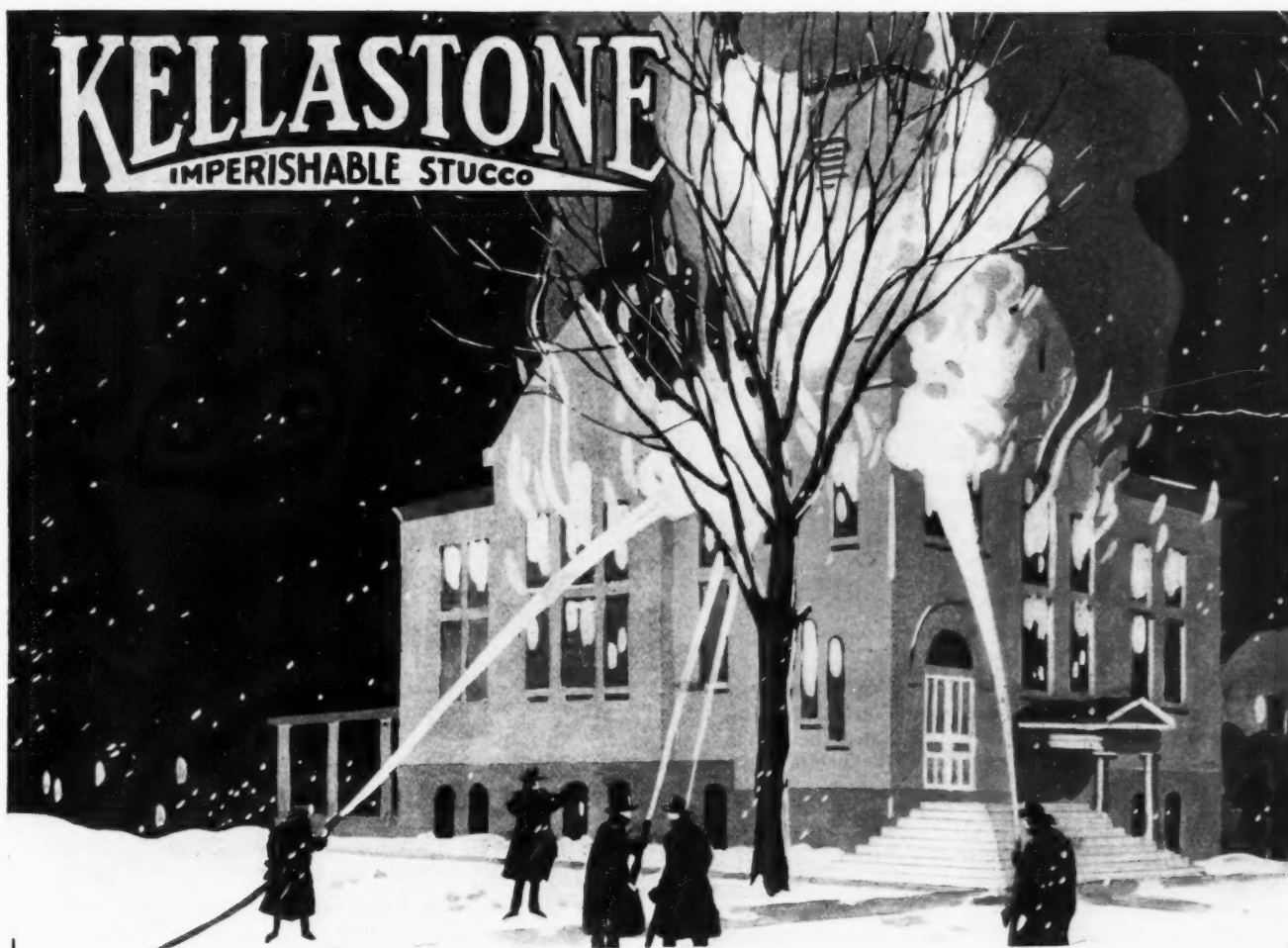
You apply Cem-bric the same as ordinary paint. It stands every kind of weather, waterproofs brick and cemented surfaces permanently, and will retain its freshness, because every rain washes and cleans the coated surface.

For concrete floors, Cem-bric provides a firm and lasting paint film. The same range of colors are supplied for floor work. The best way to know the sterling quality of Cem-bric is to test it out. It's worthy of your investigation.

Be sure to get the attractive Cem-bric folder just off the press showing color chart. Write on your letterhead or send your business card. Will send you also the latest issue of "The Ceresit Waterproofing."

Ceresit Waterproofing Company
910 Westminster Building, Chicago





Fire and Water Cannot Harm

The walls of the First Congregational Church of Newton, Iowa, on February 19, 1917, survived one of the worst fires in the history of that city—**because its walls were covered with genuine Kellastone (Imperishable Stucco).**

Cold water from the fireman's hose turned full force on the baking hot building failed to crack the surface. For Kellastone is composed of the most fire-resistant, waterproof elastic material known.

And furthermore—Kellastone is not mixed with water, but combined with a special mixing compound which itself renders fireproof all wood it saturates. Is there any wonder that the fire-resisting properties of economical Kellastone are not surpassed by brick, cement, stone or tile?

Let Us Send You the Story of Kellastone

This book also tells of Kellastone Composition Flooring, which resists abrasion, deadens noise and is without seam or joint.

The National Kellastone Co.

General Offices, 1315 Mallers Bldg.

Chicago, Illinois



Build with Beaver Brick

Beauty and permanence of construction can be obtained with this brick at a cost but slightly greater than for frame.

Well burned face brick is universally recognized as the most beautiful and durable building material in existence, and the advantages of brick construction are many.

¶ Brick homes are practically indestructible. Insurance rates are low and the cost of upkeep such as painting and repairs are reduced to a minimum.

¶ Houses of brick maintain an even temperature at all times. Cool in summer and warm in winter.

Beaver Brick is made in a variety of colors and textures. Beaver Clay, Turkestan Vertex and Volcanic Extreme Rough Texture represent the best in facing brick. Our catalog shows them in their natural colors.

Write Today

BEAVER CLAY MFG. CO., NEW GALILEE, PA.
SALES OFFICES IN ALL CITIES

WITHOUT OUR ESTIMATE YOU HAVE NO COMPETITION

The Whitacre-Greer Fireproofing Co.

Manufacturers of
**HOLLOW TILE FIREPROOFING
and BUILDING BLOCK**

Waynesburg, Ohio

Chicago Office:
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7138 Jenkins Building

FIREPROOFING MADE OF PURE FIRE CLAY

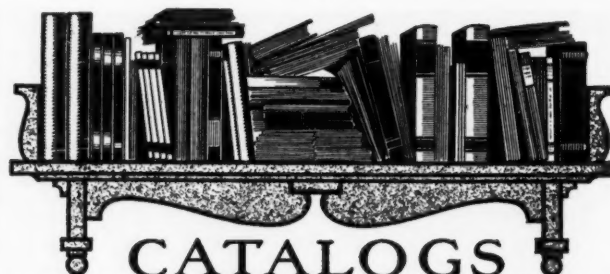
TILEBAK

(Hollow Clay Tile)

Covered with STUCCO or
HOMESTEAD FACE BRICK

Makes ideal construction for Residences, Schools, Churches,
Banks, Garages, Theatres, etc. *It's Fire-Proof*
Send for Descriptive Pamphlets

The Barkwill-Farr Company Nine Modern
Plants Cleveland, O.



CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders, has recently been sent in.

"Store Fronts by the Brasco Man" is the title of an attractive booklet of 16 pages, 5 by 9 inches, which presents in an interesting manner the essential features of the Hester and Brasco Systems of store fronts of the Brasco Manufacturing Company, 1451 Michigan Avenue, Chicago, Ill.

A collection of Denison Interlocking Tile Details is contained in a very handy booklet 5½ by 7¼ inches, containing 32 detail plates, prepared for the guidance of contractors by The Interstate Clay Products Company, Guardian Building, Cleveland, Ohio.

An Architectural Monograph on a White Pine House, competitive drawings with the report of the jury architects is Number 4, Volume III, of the interesting and instructive series of architectural monographs being published by the White Pine Bureau, St. Paul, Minn.

Cem-Bric Covering Compound, the new floor covering compound of the Ceresit Waterproofing Company, Chicago, Ill., is described in an 8-page leaflet, 3½ by 7¾ inches.

Grinding and polishing machinery manufactured by The Webster and Perks Tool Company, Springfield, Ohio, is carefully illustrated and described in their loose-leaf catalog, 9 by 11 inches.

"Modern Machine Shop Construction, Equipment and Management," by Oscar E. Perrigo, in the second edition, is a book of 384 pages, 6 by 9 inches, well illustrated, published by The Norman W. Henley Publishing Company, 2 West 45th Street, New York City. Price \$5.00.

The characteristics of California Redwood which determine its usefulness as a material for the construction of homes, engineering structures and for special uses are noted in three booklets 6 by 9 inches, by the California Redwood Association, San Francisco, Cal.

The solution of hoisting problems is greatly facilitated by the use of the Handbook of Hoisting Machinery for Industrial Works issued by the Shepard Electric Crane and Hoist Company, Montour Falls, New York. This is a loose-leaf book, 8 by 5 inches.

"The Pursuit of Safety," a beautifully illustrated book of 40 pages, 8 by 11 inches, published by "Automatic" Sprinkler Company of America, 123 William Street, New York City, tells in a very forceful manner the story of successful fire prevention.

The Grinnell Automatic Sprinkler Bulletin for July, 1917, is a food conservation number which points out in a graphical manner the danger of insufficient protection from fire of foodstuffs. The bulletin contains 20 pages, 7¾ by 10½ inches, published by General Fire Extinguisher Company, 277 West Exchange St., Providence, R. I.



District School No. 75, Evanston, Ill. Raeder & Wood, Chicago, Ill., Architects

Have You the Data

on this approved modern method for saving much of the cost of structural steel and foundations?

Long Span Floor Construction with NATCO·HOLLOW·TILE

In the use of NATCO Hollow Tile, you are offered a sure and safe way to lessen the dead load, the requirements for support in structural steel and foundations and at the same time conserve the maximum strength. Girders or pipes may be concealed in this form of floor construction by a very slight increase in thickness and dead load.

You have opportunity also to provide a floor of unusual sound deadening properties, of quick erection and the very desirable flat ceiling with its scored surface for plastering and better reflection of light.

NATCO's structural strength withstands better than similar types of construction, the knocks and shocks incident to building operations both before and while it is being placed in floor.

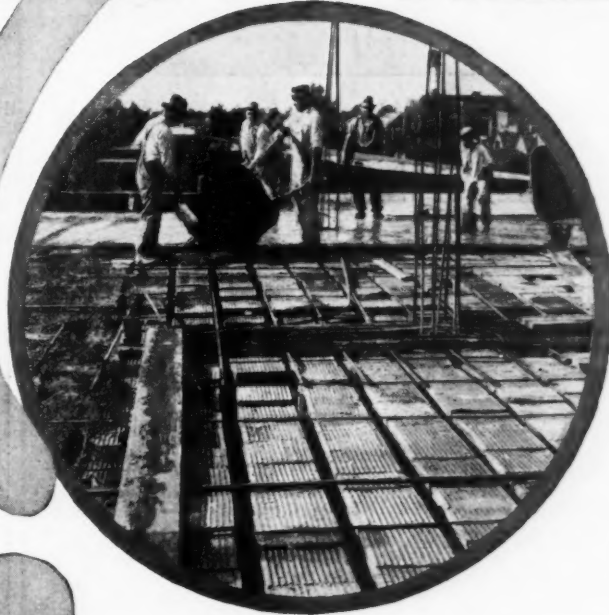
All the data needed with enlightening figures on comparative tests are in our new book, which we will gladly send to any Architect or Engineer upon request. Write today for our Bulletin No. 171.

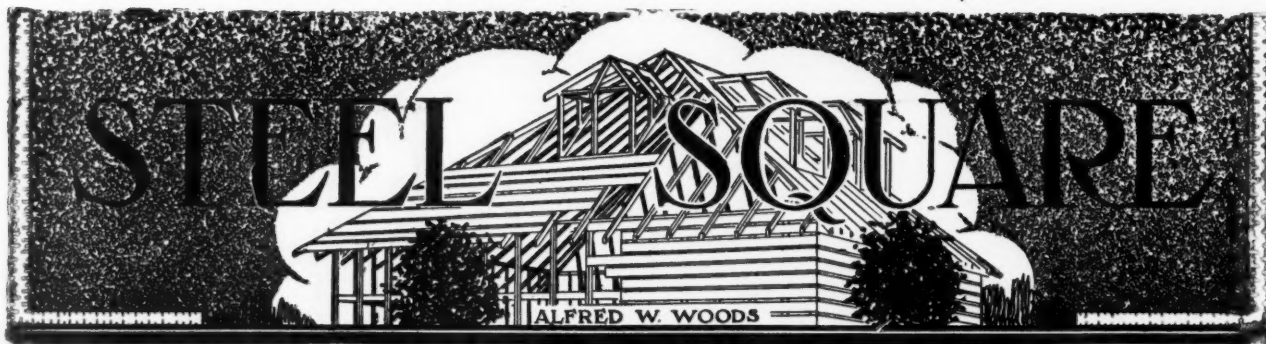
**NATIONAL FIRE PROOFING
COMPANY**

568 Federal St.

Pittsburgh, Pa.

Offices in principal cities and 23 factories in the United States





Possibilities of the Steel Square

SHOWING HOW TO FORM A BRACE TO REST AT ANY POSITION FROM A POST—RELATIVE TREATMENT OF BRACE AND HIP

By A. W. Woods

TO cut a brace with the aid of the steel square to fit against the side of a vertical post or wall is a very simple matter; but suppose the brace is set off to one side so as to intersect the post or wall at an oblique angle, then that presents a different problem and one that will tax the ingenuity of most men to know just how to place the square to get the required length and cuts for the brace.

In the case of the straight brace it requires but one placing of the square to get the cut across the side of the brace and the proportion to use on the square is the run and rise given the brace, which is just the same as for common rafter; that is, while one arm

of the square gives the angle for the seat cut, the other arm will give the angle for the plumb cut to fit against the post or wall; and the distance between the figures taken from one arm to the other will represent by scale the required length of the brace.

But when the brace is set obliquely to the post it is not so simple as additional calculations must be made before a correct solution can be arrived at, as will be seen by referring to the illustration. In this case AC represents the run of the brace and AB its rise; but in order to arrive at the former it is necessary to take into consideration what the run of the

(Continued to page 114.)



Build With Belden Brick

—On the basis that brick houses make for a higher standard of construction and therefore more good work and more profit to you.

—With the knowledge that once you are familiar with brick construction that you can make more money building brick houses than any other kind.

—With the absolute conviction that "Belden Brick" represent the biggest value you can buy and that we are prepared to give you the kind of service you want.

We appeal to you to investigate carefully brick house construction.

Direct from the Manufacturer

We have dealers in hundreds of cities and towns in the United States and Canada at the present time. We ask you to write for samples and prices and the name of our nearest dealer. Belden Brick are made in five modern factories and come in all colors, shapes and sizes, and in most textures, rough and smooth. We have the very brick you are looking for, be it house bungalow, garage, theater store, bank, church, school, library or office building.

THE BELDEN BRICK CO. Est. 1885 Canton, Ohio

Five Plants at Canton, Somerset, Uhrichsville, Port Washington

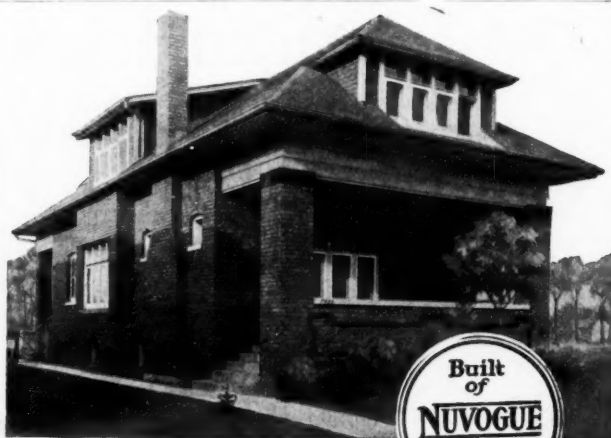
-----USE THIS COUPON NOW-----

Belden Brick Company, Canton, Ohio

Gentlemen:—We are favorable to the use of brick for many purposes and would like to know more about your product. We are figuring on building (use this line if anything definite).....

We buy thru (give name of dealer).....

Name.....Address.....



Drop us a line and tell us what you are figuring on building this Spring

HUNDREDS of progressive contractors are finding that brick construction is as easily handled as frame; and it has many advantages—the principal one is, that it gives your client a more permanent home and relieves him of the continual expense of painting and upkeep.

Then we will tell you how "Artfashioned" Brick can be used to advantage

Artfashioned Brick are made in a wide range of colors and textures. There is a Nuvoque Brick for every style of architecture—from the modest bungalow to the best building in town.

You can get "Artfashioned" Brick from your Local Dealer

We have hundreds of lumber dealers in the Middle West now handling "Artfashioned" Brick. If your local dealer does not carry our brick ask him to write us. We prefer to furnish it through his yard.

BOONE BRICK TILE & PAVING CO., Manufacturers of Artfashioned Brick, Boone, Iowa
Sales Offices all through the Middle West

MADE IN IOWA!



—vitrified house drainage? Certainly!

Says the Builder, "The Vitrified or glazed tile surface is ideal for every sanitary purpose.

"You are demanding vitrified porcelain bath fixtures. Your bathroom is to be floored and walled with vitrified tiling.

"You are paying a little more for these materials because you want quality. If

Vitrified Clay Pipe

"THE PERMANENT PIPE"

were the costliest form of house drainage and house sewerage, you would not hesitate to demand it for the same high qualities that made you prefer the other vitrified materials.

"As it happens, the cost is a little less than that of other pipe. At this time when every available ounce of metal is needed to win the war, the saving by use of vitrified pipe is considerable. It will help you to pay for your other bathroom luxuries.

"Of course it must be installed correctly. I will attend to that."

Illustrated booklet describes best method of using pipe.

THE SEWER PIPE MANUFACTURERS'
JOHN L. RICE **ASSOCIATION** **SECOND NATIONAL BLDG**
FIELD COMMISSIONER **AKRON, OHIO**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



ALLIANCE MULTI-COLOR RUFF BRICK

EXCEL ALL OTHER BRICK as to beauty of coloring. The chromatic scale of colors runs through the beautiful rough-texture faces, most of the individual brick showing on the face of each brick three or four or more of the seven primary colors or their shades—gum-metals, wines, chocolates, browns, ox-blood reds, bluish tones and multi-colors.

Mr. Dealers: If you want the best seller among the many brick made today ask for the agency for Alliance Multi-Color Ruff Brick—beautiful rough-texture and all the colors of the rainbow. Samples and prices on request.

The ALLIANCE BRICK CO., 25 South Linden Ave., Alliance, Ohio

Shackelford Brick and Hollow Tile

Made of Iowa's Best Shale

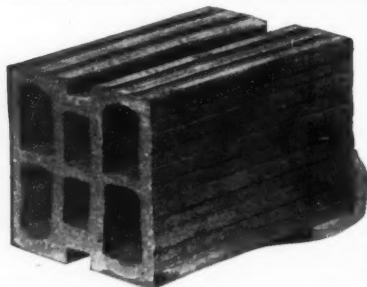
Shackelford common brick and hollow tile are made of Iowa's best shale, and always give entire satisfaction. They are in wide demand throughout the Central West. We would be glad to have your inquiry.

Our Lumberman's Special is a brick that hundreds of lumber dealers are carrying to decided advantage. If you carry chimney and foundation brick get in touch with us at once—we have something of interest for you.

SHACKELFORD BRICK CO., Des Moines, Ia.

"HEAVY DUTY" INTERLOCKING TILE

The **STRENGTH** of BRICK and the **DRYNESS** of TILE are combined in Vigo American Heavy Duty Interlocking Tile to make a **BETTER** wall than solid brick and at two-thirds the cost.



We also manufacture Fire-proofing, Building, Arch, Partition and Drain Tile, Hollow Brick and other shale products. Send for our literature.

VIGO-AMERICAN CLAY COMPANY
7th and Ohio Sts., TERRE HAUTE, IND

"Practical Homes"

A Plan Book Containing Thirty Plans and Elevations of Houses

Built During Past Three Years

This selection includes all prize-winning and mention designs from National Building Show, New York, Competition

\$1.00

Post paid

S-A-F-E, 356 Leader-News Bldg., Cleveland, O.

(Continued from page 112.)

corresponding straight brace would be as AD and from this line at right angle set off the amount that is desired for the foot of the brace as at DC .

Then AC taken on one arm of the square and AB on the other will give the respective seat and plumb

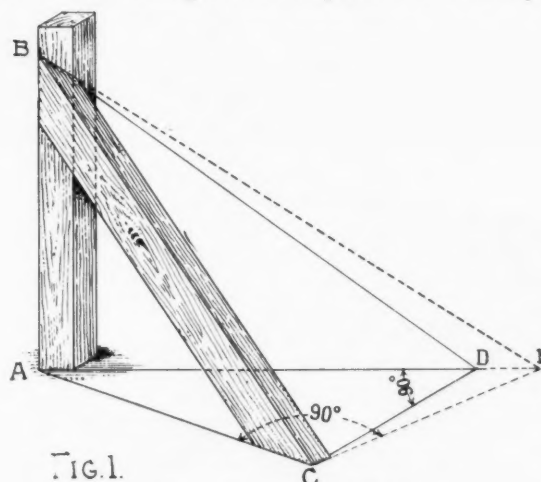


Fig. 1. How to Cut a Brace.

cuts for the brace, but there is still another cut to get and is the real sticker in the case. This requires some more planning and to get it we must once more go off into the seemingly unseen proportions, so here we go off at right angle from AC to E , which is on a line with the side of the post. Now, then, CE taken on one arm of the square and CB on the other will give the required top cut of the brace to fit against the side of the post, the side on which the latter is taken will give the cut.

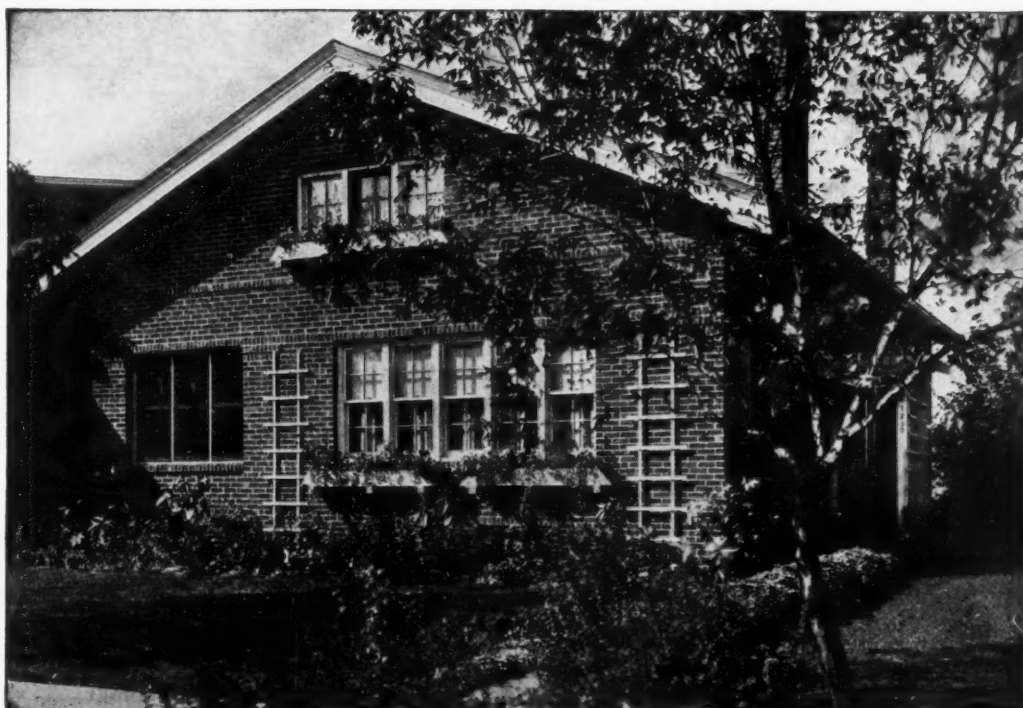
In case of the straight brace set square out from the post only one triangle is required to obtain the cuts; but in case of the brace set off to one side it is necessary to use this angle as a starting point to form the other angles required, of which there are four; in arriving at the proper angle for the top cut of the brace, which is found in the angle bounded by BCE , the side of the square on which BC is taken will give the cut.

Of course in actual practice it is not necessary to lay out all of these angles to arrive at what is wanted, but it is necessary that their relation to one another should be understood in order to readily solve problems of this kind.

In Fig. 2 is shown the layout of these angles and by making a half fold on the lines AC , AD and BD we will have a perfect model in the solid of all the parts that enter into the problem. Like letters are used in both illustrations for like parts and by a comparison of the two we trust one will have no trouble in understanding the relative position of one to the other.

To some this may seem like a nonsensical problem and not likely to ever come up in actual practice,

(Continued to page 116.)



A HY-TEX COTTAGE

More and more people are demanding brick houses because of their beauty, comfort, safety against fire and economy against depreciation. Permanent building is a vital part of national thrift.

You can easily become an expert in building with brick —and increase your profits—by reading the brick section of the American Builder. Furthermore, every Hy-tex office is at your service.

Hy-tex

The Standard of Quality in Brick

Hydraulic-Press Brick Company

Saint Louis

Branch Offices: Baltimore, Chicago, Cleveland, Davenport, DuBois, Pa., Indianapolis, Kansas City, Minneapolis, Omaha, Philadelphia, Roseville, Ohio, Toledo, Washington

Largest Manufacturers of Face Brick in the World

Send for these Booklets

"Hy-tex Brick" tell you the many advantages in building with brick, and something about the completeness of the Hy-tex line and the benefits you can derive from Hy-tex Service.

"Suggestions for Small Hy-tex Homes"—shows the possibilities of brick in small homes. It is illustrated with perspectives and floor plans of small brick houses.

Mail the Coupon NOW

Hydraulic-Press Brick Co.
St. Louis, Missouri

Send me "Hy-tex Brick" and "Suggestions for Small Hy-tex Homes."

.....

.....

Name.....

Street.....

City.....State.....

(Continued from page 114.)

but if the reader will stop to think a minute he will discover that the brace we have been talking about is the same as for a hip in a roof of unequal pitch.

If AD and ED were of the same length then the

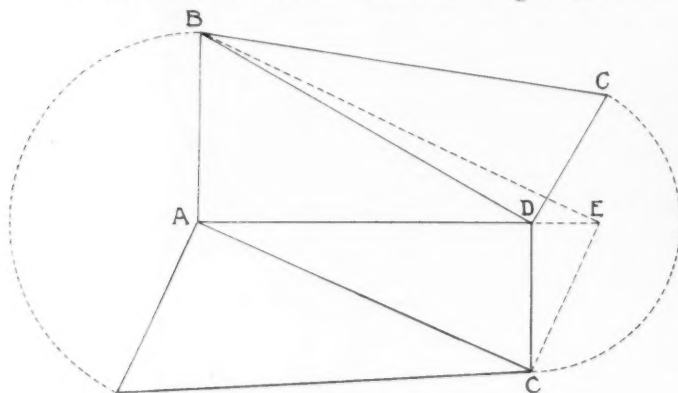


FIG. 2.

Fig. 2. Layout of Angles in Brace Cutting Problem.

brace would be the same as for a hip in an equal pitched roof and should be treated as such. This seems simple enough, but how many are there that would think of associating the brace in connection with the treatment of a hip?



Swiss Factory Duplicated in America

Desiring to establish in America a replica of its plant in Switzerland, a Swiss watch company has by land-



Architecture and Horticulture of the Swiss Alps Reproduced in Cincinnati.

scape gardening and reproducing the plans of its Alpine factory succeeded in duplicating the entire scene in Switzerland, even to the minutest detail of importing the beloved edelweiss and more than 200 other plants and shrubs from the Alpine mountains.

This rare bit of architecture and Swiss gardening is located in Cincinnati and \$8,000 was spent in transforming an unsightly rocky hillside into this fascinating bit of scenery in Switzerland.

In duplicating the original factory and its surroundings, over a hundred detail photographs of the plant in Switzerland were studied and worked out. The building plans were those used in building the original building.

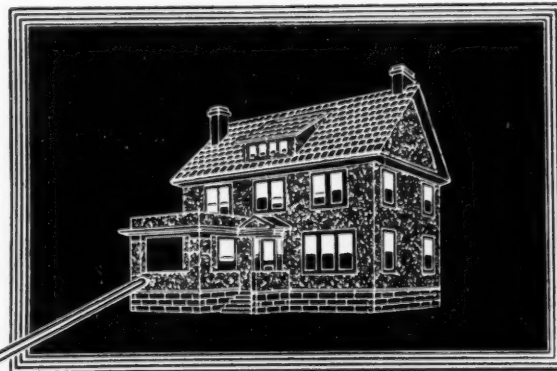
J. R. SCHMIDT.

*Blackboard talks
by the professor*



No. 6—

**"For Substantial
Stucco Work"**



"A well designed and properly constructed stucco home has an unusually substantial and pleasing appearance, and this style of construction is in much demand by discriminating home builders everywhere.

"Stucco admits of a great variety of designs, and when applied over

Berger's Expanded Metal Lath

is economical and durable—incurring no depreciation or upkeep costs.

"This combination makes not only a strong construction, but a fireproof one as well. It will save \$50 to \$100 in the original painting of a residence, and \$25 or more per year afterwards. The insurance cost will also be lower.

"Berger's Expanded Metal Lath provides a secure foundation to receive the stucco, reinforcing it over the entire area. The small mesh allows a perfect clinch.

"It is extensively and effectively used for both outside and inside walls. It keeps plaster from cracking and staining; is fire resisting; prevents vermin from making holes thru walls; muffles sound; permits immediate interior decorating; and is quickly and easily applied."

Send for Metal Lath Booklet F. A. B.

The Berger Manufacturing Co., Canton, Ohio

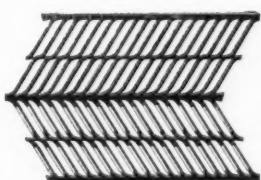
Branches: Boston New York Philadelphia Chicago
St. Louis Minneapolis San Francisco

Export Dept.: Berger Bldg., New York City, U. S. A.



Herringbone lath saves time —saves labor, lath and money

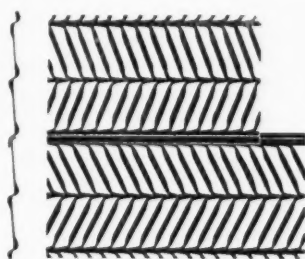
For Herringbone Lath is exceptionally rigid. Its rigidity is due to the heavy longitudinal ribs set at an angle of 45 degrees to the plane of the lath. This rigidity means quick, easy handling and erection. It means that the lather and plasterer require less time to do their work. Thus a good part of the money, which ordinarily would be paid out to them, stays in the contractor's bank.



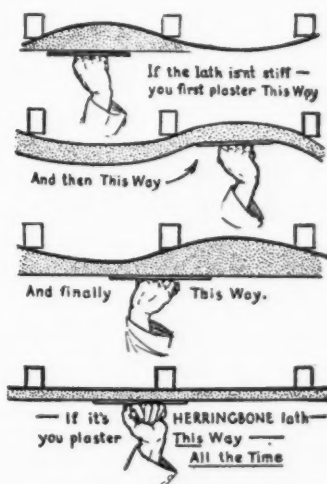
Herringbone—the stiffest lath made

Herringbone Rigidity also prevents buckling and sagging. It insures a uniform thickness of plaster. No depressions to be filled out, no elevations with which the wall must be leveled, and which often require as much as 10% additional plaster.

Herringbone also saves in the lath itself. For the selvedge form of the Herringbone edges interlock, making



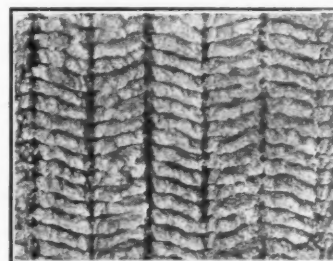
Selvedge edges interlock
No waste thru lapping.



it unnecessary to lap the lath, saving that waste as well as reducing materially the cost of lacing the sheets together.

The slanting ribs and flat strands prevent plaster from dropping down behind the lath. Just enough plaster passes through to curl around and completely cover the lath, thus forming a perfect "key." The plaster clinches the lath and the lath clinches the plaster in an unbreakable grip.

In a word, Herringbone



Herringbone flat strands prevent plaster loss

Rigid Metal Lath saves you money at every turn. You give the customer an economical, long-lasting, fireproof, moisture-proof, vermin-proof, sanitary plaster job. If you wish more complete information about Herringbone Rigid Metal Lath write us for the Herringbone Catalog.



A complete Herringbone Home

Herringbone Rigid Metal Lath

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Manufacturers of Metal Lath, Concrete Reinforcements, Waterproofings

[Members of Associated Metal Lath Manufacturers]

BRANCH OFFICES: New York, Chicago, Philadelphia, San Francisco, Atlanta, Kansas City, Cincinnati, Buffalo, Utica

The best dealer in your town has GF Products in stock

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Are You A Progressive Builder?

STUCCO is a dependable and satisfactory building material if properly handled. It should be waterproofed with Medusa Waterproofing, first to prevent its drying out too quickly when first put on and second to keep it water and damp-proof forever after.



insures the permanence of stucco, prevents complaints and "black-eye jobs" and pleases the owner.

All foundations and basement floors should be waterproofed with Medusa. It pays to persuade the owner to do this.

Medusa Waterproofing is integral, built-in waterproofing and never needs renewing.

The time is not far off when all cement and concrete work will be integrally waterproofed.

Send for Medusa Booklets on Mixing Concrete and on Medusa Waterproofing. They will give you ideas that you can use in your business.

The Sandusky Cement Company

Dept. L.

Cleveland.

USE THIS COUPON NOW

THE SANDUSKY CEMENT CO., Cleveland.

Please send me full information on the use of Medusa Waterproofing.

Name _____

Address _____



NEWS OF THE FIELD

Whipperman Called to Serve Uncle Sam

Having accepted a commission as captain in the United States Army and having been assigned to the command of Company C Sixth Nebraska Infantry, which is a part of one of the regiments ordered south at an early date, Frank Whipperman has handed in his resignation as president of the Mid-West Cement Users' Association.

Mr. Whipperman has established an enviable record with the association both as its secretary-treasurer and later as its president. He has built a wide circle of friends among his business associates, the members of the association and everywhere that his influence has been felt, who all will be interested in following his military career. They join him in his wish that when his services are no longer needed by his country, he will again take up the activities of the association.



Safety and Sanitation Congress

In view of the changed conditions that are being brought about in numerous factories by the National draft, the matter of safety of employes, especially novices who are to take the places of those who enlist, has become a national problem of considerable importance, and with this idea foremost in mind, a huge Safety and Sanitation Congress has been called to take place in New York City, Sept. 10-15. It will be the largest congress of this nature ever held, and delegates from all over the world will attend to discuss matters pertaining to the promotion and standardization of safety methods in factories, railroads, and the various industries in which hazardous occupations are found.

Coincident with the Congress there will be staged the largest Safety and Sanitation Exposition in history, three large floors of the Grand Central Palace being used for this. The National Safety Council and the American Museum of Safety will co-operate in staging this. Thousands of safety devices and demonstrations of accident prevention will be on view. The exposition will be open to the public for one week, and it is expected that it will result in at least a thousand new members being enrolled who will promise to conform to standards urged by the Council.



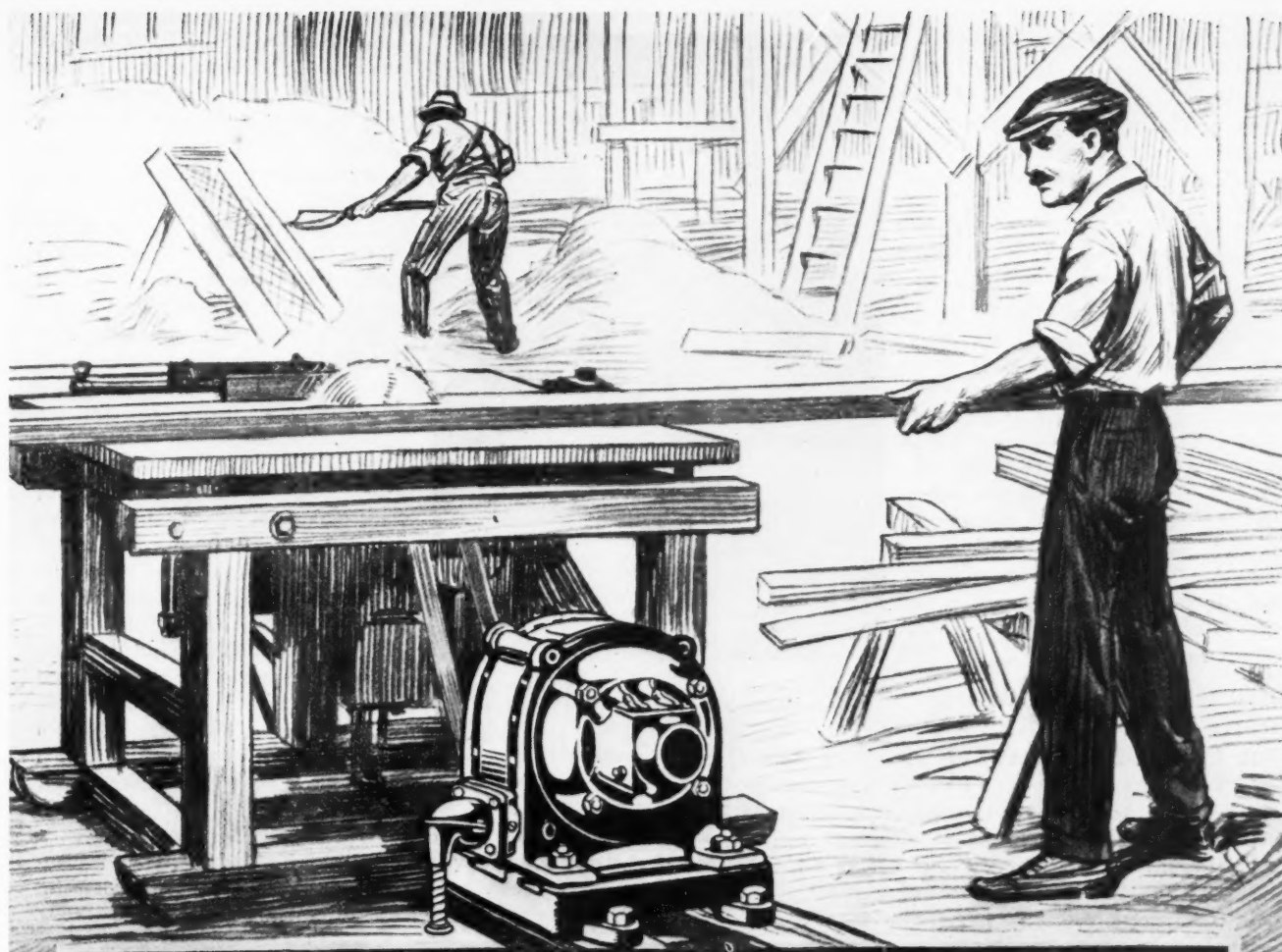
Speed in Army Camp Work

When the rush is over and the men have a minute to talk there will be many stories of wonderful record breaking accomplishments in the greatest building program ever undertaken by any person or government in the history of the world—that is the building of the new army camps or cantonments.

The Archer Iron Works told our representative a story of a little side issue speed the other day that is interesting in showing how every one is trying to do his part in getting the country prepared for war.

As Mr. Scannell tells the story, "At 11:40 a. m. July 31, we received the following telegram from Henry Monk of Pensacola, Fla.: 'How soon can you supply and deliver one

(Continued to page 120.)



“A Man and a Half”

is the man provided with a G-E motor driven machine.

Close the switch and in an instant the machine is up to speed.

The turn of a controller handle gives varying speed where required.

For heavy work nothing equals the steady, willing power of the electric motor.

G-E motors never hesitate—they operate for years with only an occasional oiling.

Ask your electric power company or our nearest motor agency about G-E motors for your shop.

General Electric Company

General Office,
Schenectady, N. Y.



Sales Offices in
All Large Cities

6989

(Continued from page 118.)

bag Archer concrete mixer?" Mr. Monk had owned and used an Archer for over a year, so he knew what the machine would save him in time.

"We wired back: 'Can ship immediately if necessary.'

"At 3:38 p.m. we received his answer: 'Ship immediately fast freight one bag Archer Mixer for government camp work.'

"We instantly took all the men available and put them to work completing a one bag machine that was nearly done on another order. At 3:45 this was loaded on our truck and at 4:10—just one hour and 32 minutes after we received the order the mixer was on the car and as the freight was scheduled to leave at 5:00 it is certain that we broke some records in getting this machine to Mr. Monk."

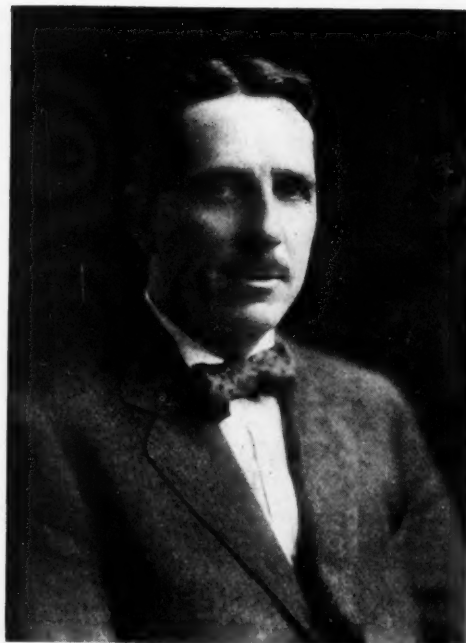


Big Organization to Promote Use of Building Tile

E. R. Sturtevant, Secretary of the Hollow Building Tile Association, has recently opened offices in the Conway Building, Chicago, and is rapidly maturing plans for standardizing building practice with respect to structural tile, and for popularizing this worthy material still further among builders.

The Hollow Building Tile Association at the present time has as members sixty-five manufacturers, representing an

E. R. Sturtevant, Sec'y Hollow-Building Tile Ass'n,
Formerly Proprietor Abingdon Clay Works.



annual output of 2,200,000 tons of material—in percentage about 90 per cent of the output of building tile. The membership extends from the Atlantic Coast to Texas. It is thoroughly representative in its character and is organized along broad lines.

The manufacturers of tile united in the organization of this association because they realized the very great need for a central body which would do for the industry the things that needed to be done and which could not be done by the individual manufacturer.

Since the use of all materials in the larger cities is controlled by law, one of the most important problems confronting this association is building codes. They have established a building code department with John A. Ferguson, a trained engineer, in charge. He will work with and cooperate with building committees and building inspectors in all cities and states which are revising their codes.

The engineer in charge will also make investigations covering the fire-resistant qualities of tile to see that it is properly recognized by the fire underwriters.



Disston Issues Internal House Organ

Henry Disston & Sons, Inc., of Philadelphia, have inaugurated a monthly house organ for employees of the company. The title of the publication is "Disston Bits."

Paint Foundations



WHERE is the contractor who would for one instant consider a 1:8:12 concrete mix for foundations and footings? First principles require that enough first quality cement be mixed in to carry the load of other materials subsequently used to make up a building. Firm foundations and footings are obvious requirements. ¶ No one is going to build on top of drift sand. Neither will the careful contractor permit his buildings to be decorated inside or out until a substantial paint foundation of pure lead and linseed oil has been laid down. ¶ Paint failures (cracking and scaling) are due nine times out of ten to having used hard, inelastic or inert pigments next to the wood or plaster. The first coat is always responsible for the success or failure of painting jobs. Seldom will any but pure lead and oil paint support the weight and pull of canvas, burlap or muslin on walls. Seldom will any other paint form the elastic coating necessary to expand and contract with the wood when the temperature changes. ¶ See that your paint foundation is right and you have gone a long way toward securing really serviceable painting. Pure white lead, linseed oil and a good painter have never been quite equalled for producing dependable, beautiful jobs. You should specify **Carter Lead** because it is conceded first place among many brands of pure white lead, because it is enough whiter to be a distinct advantage. It makes **White** white jobs and clear, delicate tints. Real whiteness in white lead indicates purity.

CARTER WHITE LEAD CO.

West Pullman Station "B"

CHICAGO, ILLINOIS



**"Ah,—Here's
the Real Thing
at Last'—
and LOW
in Price!"**

**\$2⁷⁵
Per Gal.**

Takes the place of Shellac,
Varnish and Lacquer for every
purpose. Dries in three hours.
Hardens overnight.

Degrah *Cuts Down Your Carrying Costs*

TRADE MARK REGISTERED

Pore-filling and Non-penetrating like SHELLAC. Tough, Glossy and Neutral like LACQUER. More Durable and Rubs Quicker than VARNISH. The most remarkable wood finish ever offered regardless of price—the result of 22 years of scientific thought and chemical experimentation. Made of degreas (pronounced Degrah), the animal oil taken from sheep's wool combined with other high-class ingredients. The result is an entirely new and different product. Has longer life and greater elasticity than mineral or vegetable oil products.

Takes the place of Shellac, Lacquer and the following varnishes: Hard Oil Finish, Cabinet Rubbing, Finishing, Floor, Spar, Automobile and Carriage Varnish. Perfectly neutral for Brass or Copper. Makes a Bronze Liquid. Can be used directly over Hardwood Stains. Prevents penetrating stains from bleeding. Equally good for both interior and exterior use. Transparent and smooths out like glass. Two coats do the work of a coat of shellac or filler and three of any varnish selling at the same price.

Apply it one day. Sandpaper it and apply more—or Rub or Polish it the next morning. Also comes in DEGRAH Enamel Varnish, and DEGRAH White Enamel.

We are publishing this ad for the express purpose of asking every reader of the AMERICAN BUILDER to send us his name and address and receive a free sample. There is no obligation. Write for the FREE sample today—NOW.

KEYSTONE VARNISH CO., 2005 Keystona Bldg., Brooklyn, N. Y.

You Can Take Hills On High Without A Knock

IF you will keep your motor free from carbon. That knocking in your engine—the difficulty you have climbing hills—poor pick-up—lack of power—noisy motor—pre-ignition—in fact 80% of engine trouble is caused by carbon. Clean it out with

JOHNSON'S CARBON REMOVER

and your engine will run like it did the first 500 miles, quietly and full of "pep". And your gasoline consumption will drop from 12% to 20%.

You Can Do It Yourself

For 25c—five minutes' time—and with no labor you, yourself, can remove all carbon deposits. Simply pour an ounce of Johnson's Carbon Remover into each cylinder—allow it to remain from two to twelve hours and then drive your car 10 or 15 miles. You will be surprised at the wonderful improvement.

How It Works

Johnson's Carbon Remover does not eat the carbon, but releases it from the metal and softens it into a jelly-like, inflammable mass. Then, as the engine is operated, the mass burns, pulverizes and is blown out with the exhaust in powder form.

Use It Every 1,000 Miles

If you will use Johnson's Carbon Remover at regular intervals, giving carbon no chance to accumulate, you will automatically eliminate most valve trouble and your engine will always be at its highest efficiency.

If your dealer cannot supply you with Johnson's Carbon Remover use attached coupon.



S. C. JOHNSON & SON, Dept. 1133 Racine, Wis.
I enclose \$1.00 for which please send me by prepaid express enough Johnson's Guaranteed Carbon Remover to thoroughly clean an ordinary four-cylinder motor 4 times.

NAME _____
ADDRESS _____
CITY & STATE _____
MY DEALER IS _____

Made and Guaranteed by
S. C. JOHNSON & SON
Racine, Wisconsin, U.S.A.

Advertising Is Not a Waste

Figures Given Out by the Association of National Advertisers Show Low Percentages of Advertising Costs when Compared with Gross Receipts

THE favorite complaint of the business man who has fallen asleep by the wayside is that advertising is a huge economic waste; that millions of dollars are spent and wasted in artificial attempts to stimulate selling to the ultimate injury of both buyer and seller. At first glance, and to the man who has not really studied the subject, this argument may appear logical. The only trouble with the logic is that it does not square with the facts. Most people know more things that are not so about this subject than any other under the sun.

"Let us see how much the big advertisers spend," says Alan C. Reiley, president of the Association of National Advertisers, in discussing this matter. "The average man hears talk every day about the millions and millions spent for advertising, and he finally gets the notion that somehow or other the buyer has got to pay for it.

"I wonder if Mr. Average Man ever stops to realize that those millions spent in advertising sell hundreds of millions worth of goods—goods that could never be sold so cheaply in any other way. And it is this immense saving in selling cost that helps to make lower-priced goods.

"Millions spent for advertising' sounds big, but 'hundreds of millions worth of goods sold by advertising' makes the actual amount spent for advertising look small.

"What is the exact ratio of advertising to sales anyhow? This is something that every buyer would like to know.

"I am glad to be able to tell the public. The Association of National Advertisers has collected some valuable facts and figures on this subject. Listen to a few of them:

"The advertising of one of the leading paint manufacturers of the country averages $3\frac{1}{3}$ per cent of their total sales. In other words, for every dollar's worth of paint they sell, they spend $3\frac{1}{3}$ cents in advertising. This is about equivalent to the price of a postage stamp and a cent's worth of paper for every dollar's worth of goods sold. Another big paint and varnish manufacturer spends from $3\frac{1}{2}$ to $4\frac{1}{2}$ per cent.

"Next, take clothing. We have obtained figures concerning two of the biggest clothing manufacturers in the country. One spends $1\frac{1}{2}$ per cent, the other 2 per cent. An equally prominent shoe manufacturer spends $1\frac{1}{2}$ per cent.

"But shoes and clothing are necessities," you may say. "How about the luxuries?"

"All right! Take one of the most popular luxuries in the world—candy. One of the best known candy makers in the country and one of the biggest advertisers, spends 5 per cent.

"Then take the big automobile and tire manufacturers with their full page and double page spreads. Surely now the percentage figures will begin to jump. Will they?

"You will be surprised when I give you the figures for two of the most famous automobile builders in the country. One is 2 per cent, the other is 3 per cent. Also two of the leading tire manufacturers: one spends 2 per cent, the other 2 per cent. And all four rank among the biggest advertisers in the country.

"These figures are authentic, and when you consider the enormous volume of the automobile and tire business you will see that the small percentages are ample to provide for the wonderful publicity.

"The fact is that the great majority of all nationally-advertised articles—articles which are familiarly known in every home in the country, which are famous for their quality as well as their immense distribution, belong in the 5 per cent or under class.

(Continued to page 124.)

AND NOTHING ELSE



DEVOE
LEAD AND ZINC
PAINT
GUARANTEE -
PURE WHITE LEAD
PURE WHITE ZINC
PURE LINSEED OIL
PURE TURPENTINE DRYER

AND NOTHING ELSE

That's why
DEVOE takes
fewer gallons
and wears longer

The Devoe formula tells the whole story and guarantees the Purity and your Satisfaction:

PURE WHITE LEAD
PURE WHITE ZINC
PURE LINSEED OIL
PURE TURPENTINE

—AND NOTHING ELSE

Nothing else? Just pure paint—100% paint—paint to the last drop in the can. No barytes, no whiting, no silica, no clay or other worthless "extenders" that add weight without worth.

These "extenders" may look like lead and zinc but they only make "half-paint" paint. DEVOE is all paint.

Send for this
Helpful Paint Book
"Architectural Finishes,
Specifications and Sugges-
tions"—tells how to secure
the best appearance at least
expense. Mailed free on
request. Write for it today.

DEVOE
*The oldest paint manufacturing concern
in the U. S. Founded in New York 1754*
DEVOE & RAYNOLDS CO., Inc.
New York—Chicago

PAINT
DEVOE
PAINT



Builders know

that even the moderate priced home needs more than one bathroom. The guest room, with its private bath, has become almost a necessity.

Then there should be an extra bathroom for the children. Because of its beauty and hygienic construction, builders are choosing

KOHLER WARE

always of one quality—the highest

Our manufacturing economies enable us to make KOHLER WARE available for homes of all classes, from the modest cottage up.

KOHLER WARE is first choice for the finest residences, apartments and hotels. All modern patterns.

*"It's in
the
Kohler
Enamel"*

The "Viceroy," our special one-piece built-in bath, is the most popular tub of its type ever constructed. Be sure to see it.

Every KOHLER product has our permanent trade-mark in the enamel. It is a guarantee of first quality.

Write for free copy of our interesting book, "KOHLER OF KOHLER." It contains much useful information for builders.

KOHLER CO., Founded 1873 **Kohler, Wis.**

Boston, New York, Philadelphia, Pittsburgh, Detroit, Chicago, Indianapolis, St. Paul, St. Louis, Houston, San Francisco, Los Angeles, Seattle, London

* The star indicates the location of the KOHLER permanent trade-mark in faint blue.

"VICEROY" F-12

(Patent applied for and name reg. U. S. Pat. Office)



(Continued from page 122.)

"And let this final point be remembered. • Even if this advertising represented a direct advance on what the buyer would otherwise have to pay, this would make little difference in the price of the goods. But it does not. And why not?"

"Because advertising is the most efficient method of marketing ever developed by business enterprise—therefore its effect is to decrease and not to increase the sum total of selling cost. This is a simple fact about advertising that every buyer of advertised goods ought to know."



Stewart Now Firm Name in Concrete Machinery Field

In the announcement of the organization of the Stewart Manufacturing Company as successors to The Cement Tile Machinery Company at 46 Rath Street, Waterloo, Iowa, is found the entrance, as a brand for a line of concrete machinery, of a name which has been intimately associated with the concrete machinery business for fourteen years. The new firm name is, then, really new only as a name, since it designates a firm of established reputation and long experience in this field.

The Stewart mixer is a new model built along old principles which have been tried and proved correct. In addition to the mixers, the firm will build block machines, block tampers, sand screens, sand elevators, tile cars, block cars, brick cars, dump cars and transfer cars.



New Redwood Books Issued

The California Redwood Association has started the development of a "builder's library" of publications to show the advantages of redwood for various types of buildings. Among the first of the publications, which are all being illustrated with actual buildings of the types described, is one on the redwood homes. The redwoods were, many of them, sturdy saplings at the time of the birth of Christ, and grow nowhere else than on the Pacific California coast. They are said by scientists to be a relic of the prehistoric vegetation, which flourished with the mammoths, and the five-toed horses. Another volume is on specialty uses, such as refrigerator insulation, coffins, incubators, pipe organs and the like. Another volume is on finishes of redwood, and still another on the use of redwood on the farm.



Re-inforced Concrete Ships—Why Not? Concrete Barges in Successful Use for Years Show That Similar Methods Might be Used for Ship Building

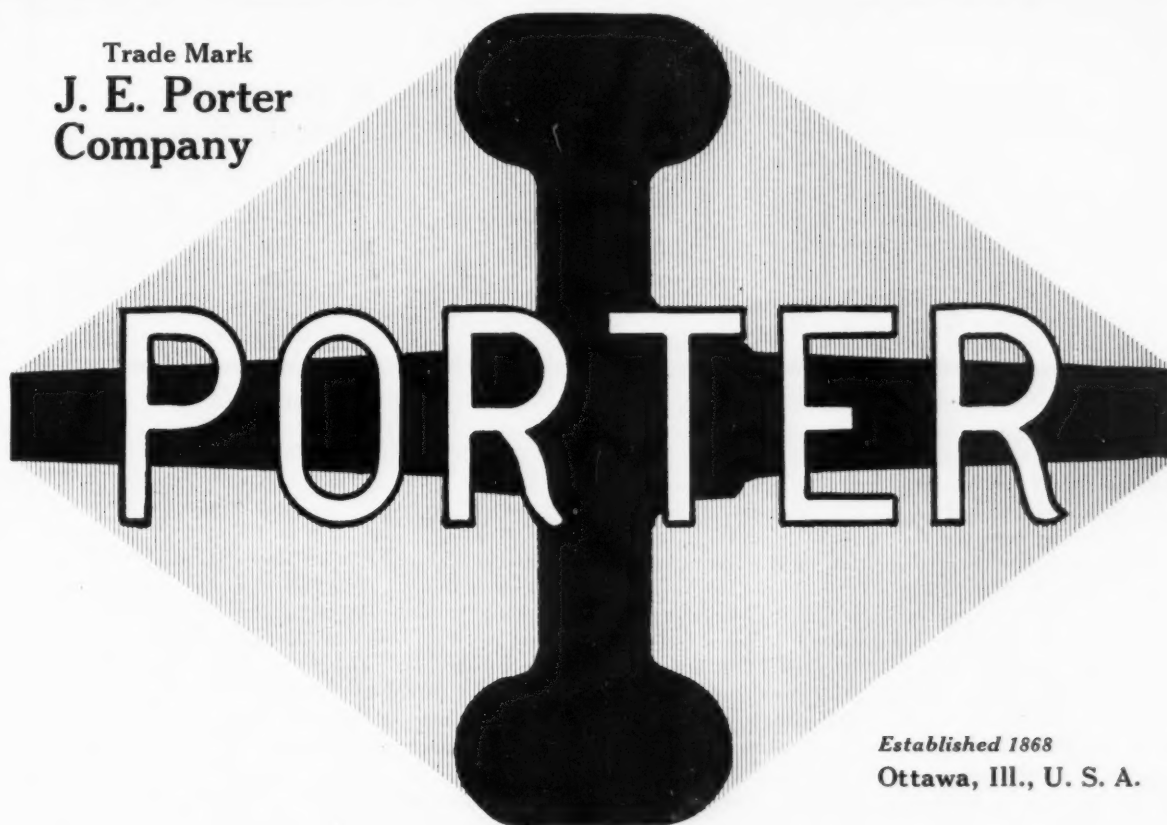
The problem that confronts our country of increasing the merchant marine requires the consideration of every possible method or material of construction. Several prominent engineers have suggested reinforced concrete.

A San Francisco paper mentioned in a recent issue the interesting fact that a local firm of engineers was designing a ship with a length of 330 feet, a beam 44 feet and a depth of 31 feet, with a capacity of 4500 tons—to be built of reinforced concrete. This is not something new—a concrete schooner was employed for some years in the north Atlantic coasting trade, having been constructed in about 1898. The London Times mentions a small boat of reinforced concrete built by a Frenchman in 1849 and still in service after a test of 68 years.

The concrete ship is only a further development of the concrete barge and such craft have been in successful use for years. Concrete lighters have been used for the past six years on Chesapeake Bay, supplying coal and water to dredges, carrying loads of sand and gravel, etc., and the ac-

(Continued to page 126.)

Trade Mark
**J. E. Porter
 Company**



Established 1868
 Ottawa, Ill., U. S. A.

Garage Door Hangers

**Porter Swiveled Door Hangers with Ball Bearings
 Insure Easiest Operation and Give Most Space for
 Automobiles in Opening or Closing**

The modern garage requires door fixtures differing from those used in other buildings. Porter Garage Door fixtures make practical application of sliding doors to any garage. Ordinary sliding doors are impractical. Porter fixtures allow opening the full width of the garage without support post.

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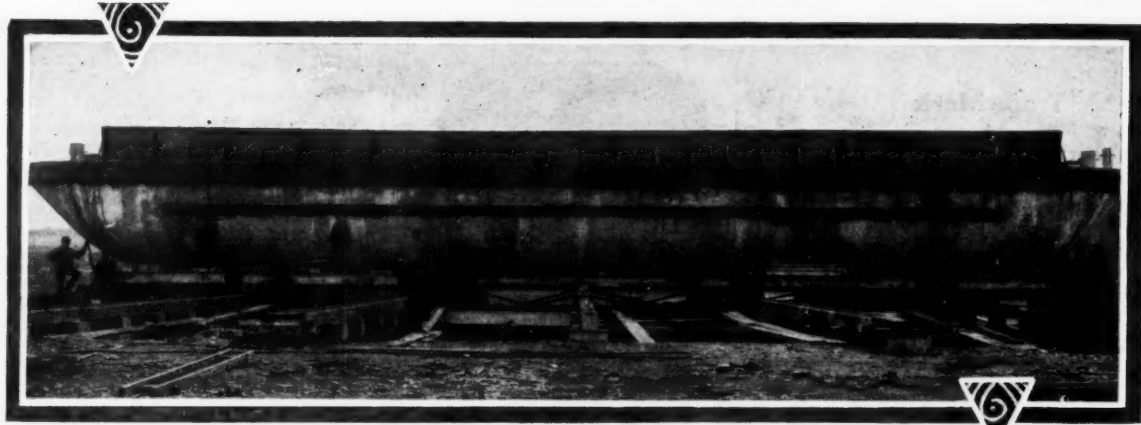
Write—let us send you our Special Garage Door Proposition Free Plan Service offer and big Catalog No. 62 at once with complete illustrations of the PORTER LINE including Stalls, Stanchions, Garage and

Barn Door Hangers, Litter Carriers, Partitions, Sanitary Drinking Bowls, Galvanized Steel Mangers, Pens, Milk Can Carriers, Feed Trucks, All Barn Fixtures, Ventilators, Haying Tools, etc. Sent FREE.

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WRITE — CATALOGS SENT FREE



Reinforced Concrete Barge of the Type Expected to Solve Our Shipping Problems.

(Continued from page 124.)

companying illustration of a 500-ton lighter on the ways just before launching is typical of their appearance. With such a craft there is no necessity for caulking or painting, the upkeep is small and there is no danger of decay. Barnacles will not collect on a concrete hull.

A concrete barge has been in service on the Welland Canal since 1910 and has seen very hard usage. It has a length of 80 feet, a beam of 24 feet and is 7 feet deep. It is interesting that the walls which were constructed between forms are 2½ inches thick, reinforced with steel rods, yet the barge is used for carrying loads of stone, etc., with conspicuous success.

Since 1910 reinforced concrete barges have been built for use on the various sections of the Panama Canal and their experience has enabled the engineers to develop a very efficient type of vessel. Recently concrete pontoons were con-

structed for service as landing stages for boats up to 65 feet in length. These pontoons have a length of 120 feet, a beam of 28 feet and are 8 feet deep. They are very thoroughly reinforced.

Vessels which are more like ships than barges have been built of reinforced concrete in Norway. A report from the American Consul General at Christiana describes a plant at Moss, Norway, where vessels of 3000 tons displacement are being constructed. The following quotations from the report indicate the extent of the work under way at that time:

"The inventor of this new style of vessel is said to be M. Nicolai Fougner, an engineer, who claims to be able to construct a ship of any size demanded. He is now building a lighter for a mining company at Sydvaranger for the oversea export of iron ore and the import of coal. The vessel, having

(Continued to page 128.)

Our Free Plans Will Help You—

Meadows
TRADE MARK REGISTERED

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing Meadows Inside Stationary Cup Elevators.

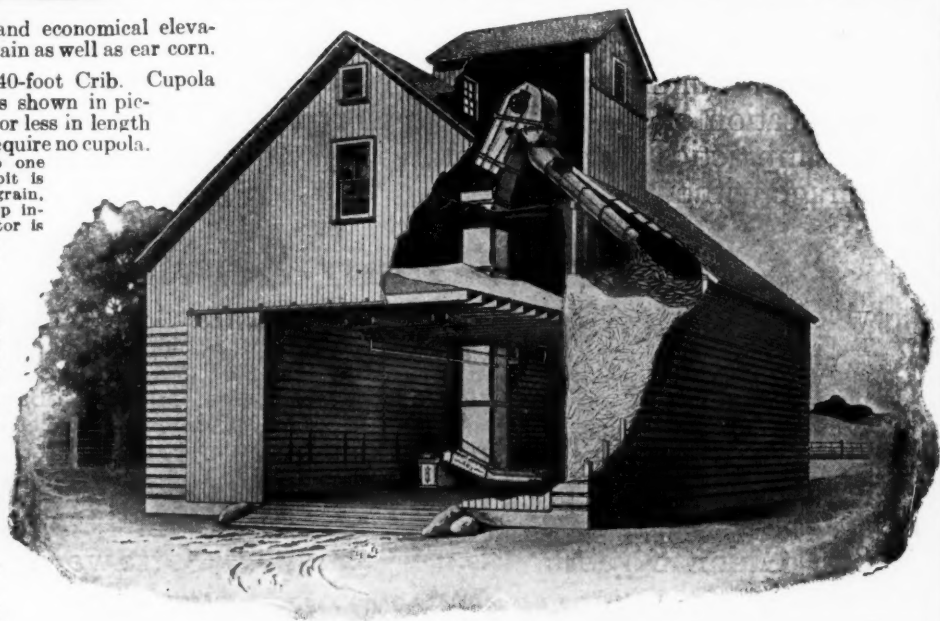
The most convenient and economical elevators, carrying small grain as well as ear corn.

The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; the cribs 36 feet or less in length with half-pitch roofs require no cupola.

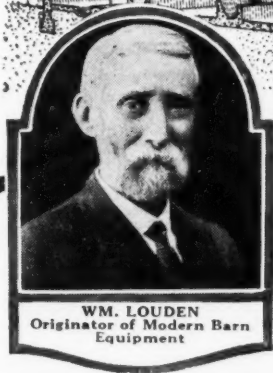
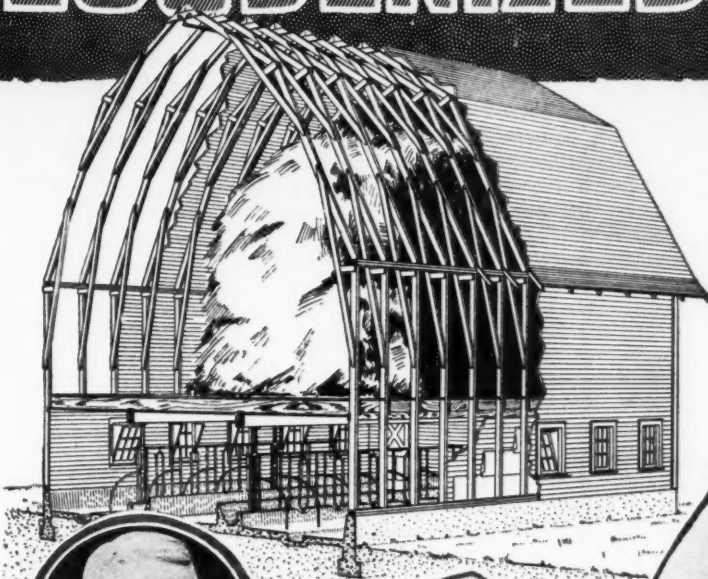
Elevator is confined to one side of driveway. No pit is necessary for dumping grain. Just a hole 16 inches deep in to which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joists.

But write in today for our free Crib and Granary plans, catalogs and large posters telling all about our outfits and their application. Valuable information for the builder, and writing for it obligates you in no way.

**Meadows
Mfg. Co.**
Pontiac, Illinois



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Louden service enables you carpenters and builders to outstrip your competitors by giving you practical, expert, authoritative plans, costs and advice on modern barn building. We plan better barns because of our fifty years experience as agricultural architects.

We tell you all about barn building and its problems, and enable you to approach your client with a definite barn plan, perfectly adapted to his exact needs. With our help you can underbid competition without jeopardizing your legitimate profits.

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Send us the names of farmers in your locality who need new or bigger barns. We will co-operate with you in getting them started.

"LOUDEN BARN PLANS"--Write for It--No Charge

This 112-page book is free to carpenters and builders. Contains 74 representative plans for cow and horse barns, hog houses and farm buildings, with full description and

estimated costs. Also expert advice on grading, drainage, concrete work, framing, strength of materials, lighting, ventilating and all other barn problems. Write for it today.

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To insure satisfied customers and more firmly establish your reputation as a barn builder, suggest Loudon equipment throughout every barn you build.

Louden equipment is the recognized standard equipment, in use in over a million barns, including many U. S. and State Government barns. 224-page Catalog showing full Loudon line sent on request.

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IT IS THE

KERNERATOR

The Built-In-the-Chimney

INCINERATOR SYSTEM

This equipment is designed for the builder who wants to install the cleanest, quickest and cheapest equipment for the complete instantaneous elimination of garbage and waste.

Cleanest—because the garbage is burned to cinders by a method that also renders the wastage odorless. Garbage cans and rubbish piles with their flies, vermin and the like are eliminated (as the incinerator is located out of the way in the cellar). All waste including tin cans, garbage, broken crockery—everything that is not wanted, disappears forever through the little door in the kitchen.

Quickest—because as soon as waste accumulates it is placed in the hopper door shown above and falls down the flue to the incinerator in the basement.

Cheapest—because its first cost is its last. No commercial fuel is required. The garbage "consumes itself" when ignited, as there is plenty of paper, rags and other dry combustible material to burn and to dry out moisture in garbage, which, when dried, is readily combustible and burns to harmless ashes. Garbage haulage is eliminated.

Consider This, Mr. Contractor

Satisfied clients are your greatest asset. If you show them a way of eliminating all garbage and waste, without a penny of expense other than the nominal first cost, you will have solved for them one of their most disagreeable and annoying problems. No one wants garbage cans and waste piles around their homes. Here is a simple, efficient and economical method of eliminating these intolerable and unhealthful nuisances.

Your buildings will be more desirable than any others in your community. Your clients will be grateful.

Send for our two big books which describe the Kernerator completely and state what users have to say about them.

Address Dept. A

THE KERNER INCINERATOR CO.
592 Clinton Street, Milwaukee, Wis.

(Continued from page 126.)

a displacement of 3,000 tons, is to be ready before the end of the current year. It is stated that these concrete ships can be sailed or engined like other vessels, and experts consider that a new epoch in shipbuilding has arrived.

"The ship, which arrived in Christiana last month, resembles a large barge, and is constructed entirely of concrete with the exception of the ribs, which are of steel. This new method of constructing ships has attracted much attention. The Swedish Minister of Marine, M. Brostrom, one of Sweden's largest shipowners, immediately ordered a lighter of some thousand tons displacement, and he was present when the craft was launched at Moss. He was accompanied by four experts, all of whom expressed much satisfaction at the result.

"Two other lighters are now on the stocks, and a large ship for a 4000-ton craft is nearly completed. More than 200 men are now working in the new yards, and five lighters have been contracted for in addition to the one completed and the two on the slips."

In view of such examples proving the usefulness of concrete vessels of this character, it would seem wise to consider concrete in the construction of ships which are to increase our merchant marine to the proportions demanded by the present requirements. If sea-going barges were to be constructed, or smaller craft suitable for lake traffic, this would release for other purposes many ships now in use in this capacity. The presence of the necessary materials for a concrete vessel at so many convenient locations would make it possible to provide a large tonnage, and progress in construction would be faster than with ships of steel or even wood.

The subject is certainly one worthy of serious consideration on the part of the Shipping Board in connection with their present program of ship construction.



Pushing Sale of Brick by Proper Display

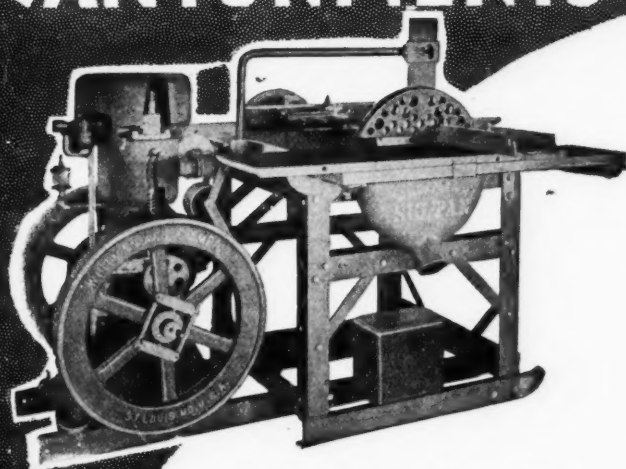
(Continued from page 80.)

portant factor. The AMERICAN BUILDER staff has had occasion to note, in frequent journeyings up and down the land, that the dealers who do a nice business in building bricks invariably have gone to the trouble and expense of fitting up their rooms with a nice display; a display showing the bricks all laid in real mortar, a neat panel for each style of brick, so that the customer could easily see just exactly how any particular brick would look when laid in the wall.

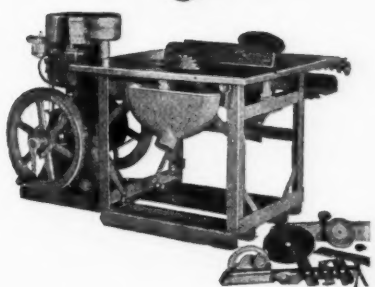
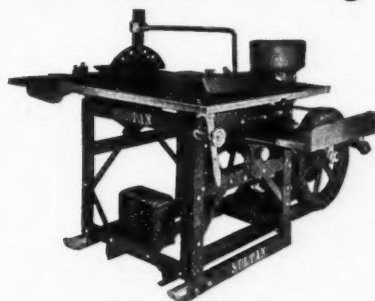
We have collected photographs of a number of these displays, showing how these are arranged and the problem handled in the offices of some of the prominent dealers. The photo presented here shows the display of the Cleveland dealers at the Complete Building Show. It is rich in ideas for the firm wanting an elaborate display.

Lumber and building material dealers who have never gone into the brick line very extensively, but who want to get in and take advantage of the strong tide of popularity that is now setting brickward, will do themselves a good turn by acting on this suggestion. It is not enough to have just a few sample bricks tucked away somewhere in a corner to be dragged out and dusted off. Get into the game and go after the business and be ready for it with a winning display when you get your prospect into your office.

SULTAN SAWS HELP BUILD U.S. CANTONMENTS



3-B Sultan Saw Rig



YES, The Sultan Saw Rig Outfit HELPED TO BUILD FORT RILEY. When the big rush came the Sultan Saw rig was first on the job. The first order came "SHIP BY EXPRESS SIX NINE HORSE POWER SULTAN SAW RIGS WITH SIXTEEN INCH RIP SAWS, GIVE US THE MOST POWERFUL SAW RIGS MADE," so we shipped the Big 3-B rigs with Special Heavy mountings and 9 H. P. Sultan Engines. Second order followed for same kind of rigs by express and so has the Sultan proved useful when millions of feet of lumber must be cut to hurry construction.

SULTAN PORTABLE SAW RIGS

have proven equal to the task in an emergency. The years of successful service back of Sultan Saw Rigs make them preeminent. Thousands of them are in use today. You will need such an equipment as the Sultan if you are going to get maximum results this coming season.

Send for our LOW PRICE offer and for the Sultan Builders' Equipment Catalog.

Whitman Agricultural Company
7304 South Broadway - ST. LOUIS, MO.

Here's the Coupon for Quick Action

Please send special low prices, also your new catalog of Sultan Builders' Equipment.

Name

City State



(Continued from page 55.)

great changes in temperature during the day and night. It should be located in sandy soil if possible and on rolling ground so as to fit in the general plan of farm routine. An open, sunny space is advisable so as to have the direct sunlight reach all parts of the building. A southern slope has the advantage of warmth, dryness and natural air drainage. Convenient pasture and shade should be provided for, but the heavy shade of trees or buildings should be avoided in locating the house.

"In Fig. 3A, as shown, the foundations are of concrete with footings extending below danger from heaving by frost. The footings in this case are 18 inches wide and 12 inches deep. The foundation wall is 12 inches thick and 2 feet 6 inches from the bottom of the floor to the top of the footing. This same foundation would be advisable if the walls were entirely of frame construction instead of concrete and frame.

"The concrete for the footings and foundation walls should be of a mixture of at least 1 part Portland cement, $2\frac{1}{2}$ parts clean sand and 5 parts of crushed stone or screened gravel.

"The side and end walls may be of 1:2:4 concrete 8 inches in thickness, or of 2-inch by 4-inch stock or heavier if of frame. Frame walls should be substantial, close and warm. They may be single in the smaller buildings, but in larger buildings such as shown should

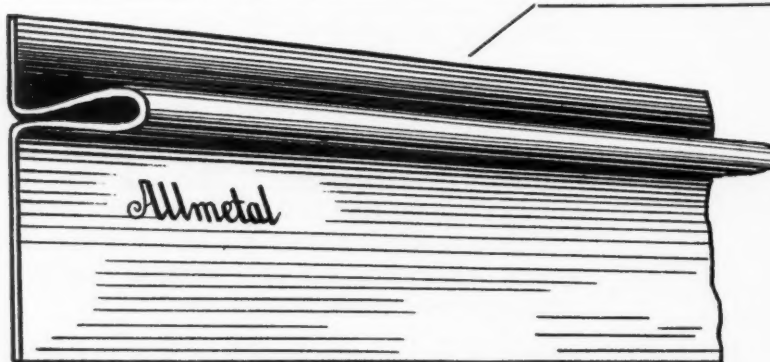
be made double, either by siding up both the inside and outside of the studs, or by putting on a double outside layer with building paper or felt between the layers. Good results in a double wall may be obtained by using shiplap for the inner boards and drop-siding for the outer surface.

"If the south or pen-side wall is of frame construction in the building shown, the sills and plates should be of 2-inch by 6-inch stock; if it is of concrete, 2-inch by 8-inch material will be needed. A 2-inch by 8-inch ribbon is used to receive the rafters of the low part, while two plates made of 4-inch by 6-inch stock support the rafters of the higher part of the building, and two pieces of 2-inch by 8-inch are used for the plate on the concrete wall. The middle wall containing windows over the low roof consists of 4-inch by 4-inch posts spaced 6 feet apart, and sheathed between the windows.

"The roof consists of 2-inch by 4-inch or 2-inch by 6-inch rafters, spaced from 18 to 24 inches apart, depending upon the load to be carried and length of span between supports. In Fig. 3A the rafters are 2 inches by 4 inches in size, spaced 24 inches on centers, and are supported at the wall plates and by an interior girder held at the top of a row of 4-inch by 4-inch posts spaced 6 feet apart, as in the wall just at the right hand.

"The roof covering may be wood shingles or pre-

(Continued to page 132.)



How about F A L L business?

Do you expect a slump during the coming Fall and Winter season? Are you interested in a proposition that would keep you busy every working day of the season? In other words do you want to spend a little more energy now and line up business that will carry you through the dull season?

If so, you will want to find out about

ALLMETAL WEATHERSTRIP

It's a live specialty! Why not work up a fine substantial business with Allmetal Weatherstrip by the assistance of our carefully devised, sure-fire, sales plan. Allmetal Weatherstrip, owing to its simplicity of design, is the easiest to install—it is the best known and therefore easiest to sell.

Allmetal has Uncle Sam's Approval

It is the one strip that will not crack, rust, decay or disfigure the woodwork. He has selected it for his defense against leaky, balky windows and high cost of fuel. It is the perfect, the modern, the only strip to use.

We show You how to get quick results

Our short cut methods get live prospects quickly. We give you the benefit of our experience. Supply you with advertising material adapted for your particular purpose. Write—get started NOW!

Allmetal Weatherstrip Company, 230 West Madison St., Chicago



THE TELEPHONE AND TELEGRAPH BUILDING

NEW YORK CITY

WILLIAM WELLES BOSWORTH, *Architect*

MARC EIDLITZ & SON, *Contractors*

This building is equipped throughout with Corbin Template Hardware for steel doors, sash and frames. The Corbin Three-Point Lock is used on doors to vaults. Corbin Door Checks, Corbin Fine Office Locks, Corbin Heavy Template Butts, Corbin Special Transom Fixtures, self-closing in case of fire, and Corbin Monogram Knobs form an equipment in harmony with the excellence of other portions of the building.

We satisfy exacting conditions.

P. & F. CORBIN

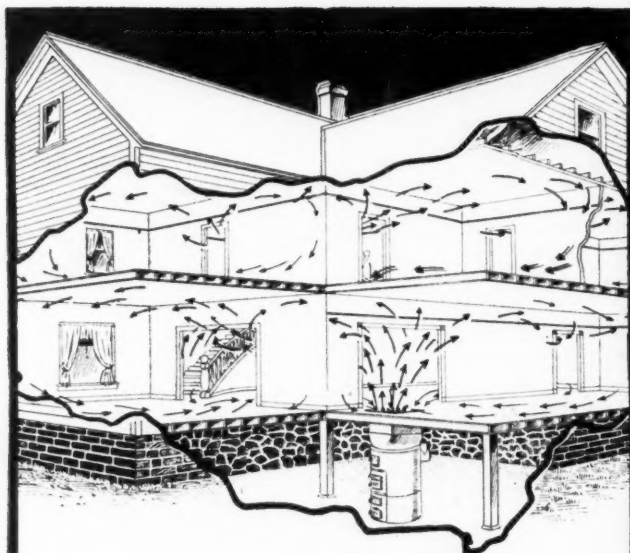
American Hardware Corporation, Successor

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Extra Profits

Many contractors, builders and furnace men who have taken advantage of the big demand for the Mueller Pipeless Furnace are making big money in this new field. Thousands of dwellers in stove heated homes are having it installed. It is also a practical, efficient and decidedly economical method of heating modern homes of medium size. You can make good money for yourself and insure complete satisfaction to your customers by installing the Mueller Pipeless in new and old houses.

MUELLER PIPELESS FURNACE

—a *real* furnace. Exactly same construction as the old reliable Mueller line, but without pipes or flues. You can install it in one day. Heats whole house comfortably, cleanly, reliably and economically from one register. Burns hard or soft coal, coke or wood. Saves 35% in fuel. The Mueller Pipeless Furnace is dominating the "single register" heating field because it possesses the unequalled heating efficiency and fuel economy of the nationally known Mueller Warm Air, Hot Water, Steam and Vapor

systems and has behind it the 60 years' reputation of the L. J. Mueller Furnace Company.

Extensive advertising has made the Mueller Pipeless well known. Contractors, builders, and furnace men everywhere are profiting by the big demand. Get in on this now—get your share. Write at once for our proposition.

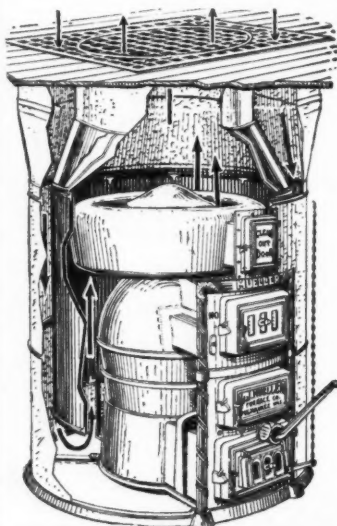
**L. J. Mueller
Furnace Co.**

Makers of Heating Systems
of all kinds since 1857

218 Reed St.

Milwaukee, Wis.

Consult, free, our expert service bureau on all your heating requirements—get our estimate on all your heating installations.



(Continued from page 130.)

pared roofing, as was the case in Fig. 3A. The under side of the roof may be sheathed with wood or covered with wall board. Calculations for the size of rafters will be shown later.

"Earth floors, which were commonly used in the old type of hog house, have been replaced by wood or concrete, or a combination of both for sanitary reasons. In a permanent building the earth floor is decidedly insanitary and its use should be avoided. Brick and concrete have been used, but in many cases have been found to be so cold that young pigs could not live upon them.

"Wood floors in the form of creosoted wood blocks, or planks joined together in sections so that they can be removed for cleaning, have been found to give good service when laid on a concrete base. Creosoted flooring, or the creosote brush treatment of both floors and walls, is a sanitary measure and adds to the durability of the wood. The floor of the central passage between pens, or the driveway if the building is large enough to allow one, should be made of concrete or concrete covered with creosoted wood blocks. This central passage should be provided with drain tile beneath the floor to carry the drainage away from the pens. The floors of the pens in Fig. 3A slope to the edges of the central passage, where shallow water drains are provided.

"If a plain concrete floor is used it should be about 4 inches thick and composed of a mixture of 1 part Portland cement, $2\frac{1}{2}$ parts clean sand, and 5 parts crushed stone or screened gravel, as in the case of the foundations. If a wearing surface of concrete is desired, it should be about 1 inch in thickness and composed of 1 part of Portland cement and 2 parts clean sand. This should be laid as soon as possible after the base is placed and before the base has had a chance to become thoroughly dried out or dirty.

"If a wearing surface of creosoted wood blocks is to be used, the thickness of the concrete base need be only 3 inches. The $2\frac{1}{2}$ -inch size of wood blocks are sufficient for this type of floor.

"Houses should have an abundance of light and good ventilation. In Fig. 3A the windows in the upper part of the central wall and also in the pen-side wall at the right are placed very close together so as to obtain both light and air. The upper line of windows are of the swinging type and aid in the ventilation of the building.

"Two roof ventilators are used in addition to the windows. One of these is located near each end of the building, with the lower ends about 2 feet above the floor and the upper ends just above the comb of the roof. These ventilators may be either round or square, but should be of at least 36 square inches inside area. This might be obtained by using a 6-inch by 6-inch square passage, or about an 8-inch diameter pipe.

(Continued to page 134.)

HOLLAND FURNACES

Make Warm Friends

Ask Any Owner



Yes—ask any owner of a Holland Furnace.

Hear what **he** has to say about how warm it keeps his whole house—how warm it keeps the floors—what perfect ventilation it provides—how much it saves in fuel. You will then readily understand why Holland Furnaces make warm friends everywhere. The lucky owner of a Holland Furnace regards it literally as the heart of his home. It insures a warm, healthful, cosy home—the kind of home that keeps the family circle together. Investigate the merits of the Holland Furnace and you will understand why more than thirty thousand owners declare it to be the best and most economical heating plant that can be installed in a home.

Holland "Boosters" Also Make Warm Friends

Your recommendation, Mr. Contractor, goes a long way in the final selection of any special kind of material, appliance or fixture for the home. And your reputation and success depend very largely upon the degree of satisfaction the home owner derives from your recommendations.

You can conscientiously recommend the Holland Warm Air Furnace. You know, because you have given the subject of heating plants close study, and also because scientists have proved it, that warm, moist air, such as the Holland Furnace supplies, is the most healthful heat that can be had. You know that it costs less to install a warm air furnace than any other kind of a heating plant and that it is the most economical to operate.

Your recommendation of Holland Furnaces will make you friends. Not only does a Holland Furnace insure an abundant supply of heat in even the coldest weather at the smallest cost, but it invariably enhances the value of the house in which it is installed. Our Holland Service Home Comfort Bond is the strongest guarantee ever given with any heating plant. Free heating plans. Send your floor plan.

Special Proposition to Contractors and Builders

Holland Furnaces are not installed by dealers. We have our own special representatives who have made a study of the Holland Furnace and who make a regular business of installing it. We have a very special proposition which we would like to submit to you. It is a proposition which means increased prestige and more business for you. Let us submit this proposition in detail to you. Mail the coupon for full particulars. This places you under no obligation of any kind whatsoever. Just sign and mail coupon today.

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I am interested in your Special Proposition to Contractors and Builders. Without obligation to me please send me full particulars.

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World's Largest Installers of Furnaces
2 Factories—128 Branches

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 134.)

"The interior arrangement shows a line of pens on each side of the center passage. These are divided by movable wooden partitions spaced 6 feet apart in this building and held in place by the 4-inch by 4-inch posts shown at each side of the passage. Pens 6 feet by 8 feet are a good size unless feeding is to be done inside, when they should be made a little longer. Small sows do not require so much room as large ones and it may be advisable to make a part of the pens 5 feet by 8 feet.

"Partitions should be tight at the floor and for 10 or 12 inches above to keep young pigs from crawling thru and to protect them from sows in neighboring pens. Above the first 10 or 12 inches the partitions should be open enough so that the hogs can see out. All partitions should be 30 to 36 inches high. Alley gates should be removable by lifting out.

"The hog doors opening into the pen or yard should be 22 or 23 inches wide and 30 to 31 inches high in the clear.

"Pig rails or guard rails for the protection of young pigs should be placed on the inside of the pen from 6 inches to 10 inches from the floor, and should stand out 6 or 8 inches from the wall.

"If we assume that the dead load, snow load and wind load on a roof of the type shown in Fig. 3A is approximately 30 pounds per square foot of roof surface for a building in a temperate climate having aver-

age snowfall, and that yellow pine timber is to be used with an allowable working strength in bending of 1,000 pounds per square inch, we can find the size of the material needed for the rafters, knowing their length of clear span. We will use our ordinary beam formula which we used in the last talk.

"Measuring up the section shown in Fig. 3A, we find that the greatest length of projection of rafter down onto a horizontal line at the floor is about 8 feet. We will use this for the value of l in $M = \frac{1}{8} W l$, where W will be the total load carried by the span of rafter which we are considering. If the length of rafter on the left from plate to girder is 10 feet, and the rafters are spaced 2 feet apart and loaded with 30 pounds per square foot of roof, this total load will be $10 \times 2 \times 30 = 600$ pounds.

$\frac{p l}{e}$

"Then filling in our formula, $\frac{p l}{e} = M$, we have for

a 2-inch thickness of stock,

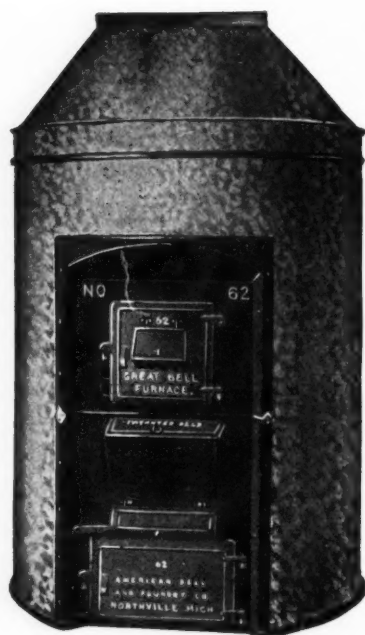
$$\frac{1,000 \times 1/12 \times 2 \times h^3}{h \div 2} = \frac{1}{8} \times 600 \times 8 \times 12$$

Solving,

$$h^2 = 21 +$$

$$h = 4 + \text{inches.}$$

"This would indicate that 2-inch by 4-inch yellow pine rafters spaced 2 feet on centers may be used if there is no danger of heavy snowfall."



The Great Bell -original-Pipeless-Furnace

Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. \$38.00 to \$94.00.

Made for the building where a furnace is needed, but where the cost has been prohibited.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort and the lowest relative cost. While **Cost** is secondary to **Service** in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence.

Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces.

American Bell & Foundry Co.

27 Cody Street, Northville, Mich.



Big money in furnaces

Here is your chance to make good money in furnace installations. Installing Hero Pipeless Furnace means *less* work and *more* money. Less work because you have but one register to put in instead of some six or seven of them. More money because the first cost of the furnace is the lowest, consistent with heating efficiency and because of the labor and materials saved on installing.

Here is the BIG point—

You don't have to hire a furnace expert to put in the job for you. You can handle the whole proposition yourself. Just keep the furnace expert's share right in your own pocket and install the Hero yourself in a perfectly satisfactory manner.

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Charles Smith Company has been manufacturing Hero Pipeless Furnaces for the past twenty-five years. We maintain a steadily growing business and have every facility for giving you first class service. Our engineers will aid you in choosing the most efficient type of furnace for each particular job. They will send you blue prints and advise you on the best installation method. All absolutely free.

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If you install one Hero Pipeless furnace you will be an enthusiastic Hero booster. If you want to work up a good healthy business in Hero Furnaces in connection with your regular work you will find us ready to give you every assistance to that end. We will appoint you our agent with a generous size territory—and a generous gratifying commission on each job installed.

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Furnaces by sending for our Catalog No. 1.*

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57 West Lake Street

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CHICAGO, ILLINOIS

Figures Show That Now Is a Good Time to Build

(Continued from page 84.)

With these figures you can prove conclusively that cement and probably other building materials you handle have not shared equally in the general advance and that now is a good time to build.

Explain that first cost alone means little. If a factory or hog house produces returns 90 per cent greater today than in 1909, the wise investor will not hesitate at greater first cost; for his income from that investment will increase in greater proportion. The advance in prices of other commodities has made improvements all the more desirable.

If anybody tells you that he can't afford to buy cement now and that the high price of cement is holding up work, use this information to convince him that the cost of cement is relatively not high.



The Man From the Lumber Yard

(Continued from page 40.)

builder who is ambitious to do big things, not to overlook the little.

The plea I am making is for you to fit the house to the inhabitant.

The reason people, women especially, are often better suited in buying an old house than a new, is because they get a better fit in the old.

The builder should forget some things and remem-

ber when he is putting up a house for Mrs. Jones, that Mrs. Jones should be taken into account just as much as if she were having a bonnet made for her.

Place as Well as People

Even at the risk of your patience, I want to emphasize the fact that "place" must be taken into account as well as people.

This is illustrated quite well by two houses out in the suburb where I now live. One is a sprawling, spread-out building on a small lot that is entirely covered.

The adjacent buildings are two and two and a half stories which emphasizes the squatness of the building.

In marked contrast is a tall spindling building in the center of large grounds. If the two buildings would swap locations, each would benefit.

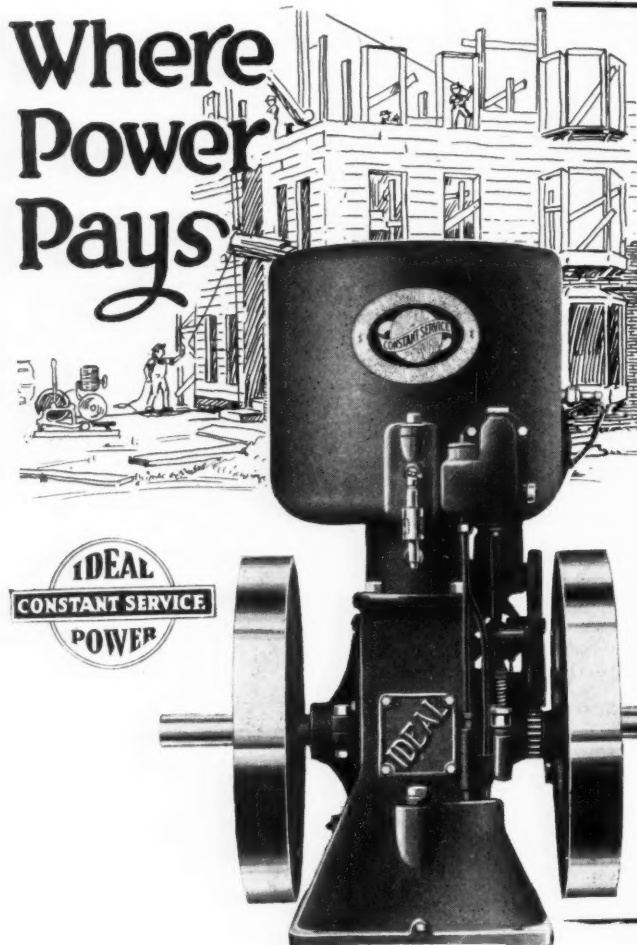
It was not a matter of money. It was simply because these two jobs happened to be placed in the hands of two men who made a specialty, one of the low rambling type, and the other of the spindling type.

The house in the valley should not be built on the same lines as the one on the hill top.

Smile, You Crab, Smile!

Some may remember the bicycle face that was acquired some years since. All have read of the

(Continued to page 138.)



ON construction work of all kinds there is need for **reliable** power to speed up work.

Wherever there is material to hoist, water to pump or any other work requiring power, the Ideal Engines will deliver dividend paying service. They are designed essentially for this class of work.

Light weight for their power—therefore easy to move about. Vertical type, requiring small floor space. The enclosed crank case keeps the cylinder, piston and rings free from dust, dirt and grit.

Frost-proof, dirt-proof and fool-proof. Run with minimum care and attention. Need no engineer. Well balanced so that when mounted they run with practically no vibration. Equipped with a special carburetor, so arranged as to use warm air, which insures greater efficiency even in the coldest weather.

For complete details of the Ideal Engine, together with all information and special equipment for carpenters and builders, address

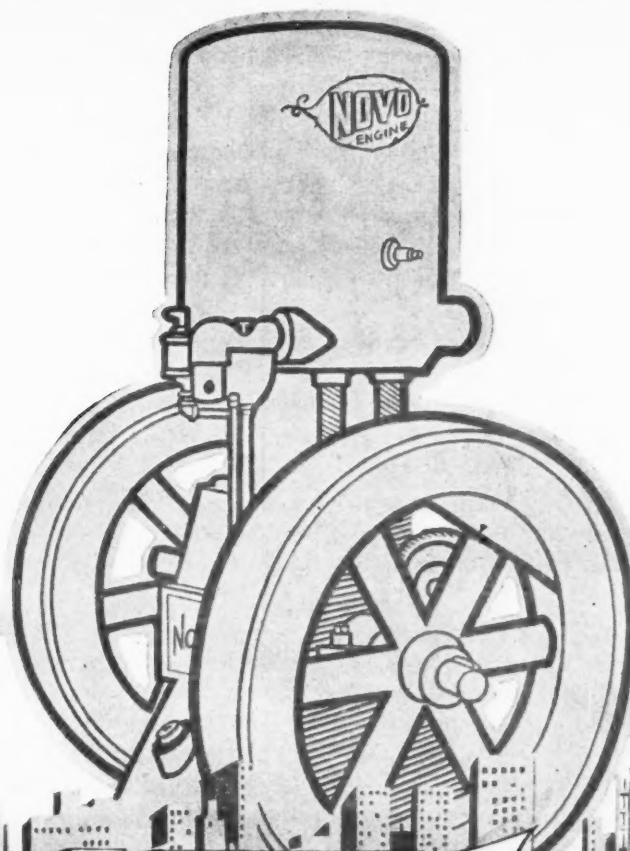
IDEAL ENGINE CO.

R. E. Olds, Chairman

630 E. Kalamazoo Street

Lansing, Michigan

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



NOVO

STANDARDIZED POWER

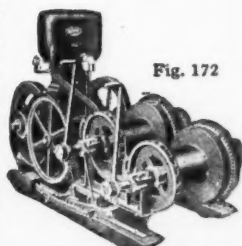


Fig. 172

Novo Hoisting Outfits for every hoisting job requiring less than 20 H. P.

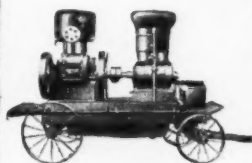


Fig. 290

Novo air compressors cover a wide range of sizes from 1½ H. P. 5 ft. machines up to the 15 H. P. 80 cu. ft.

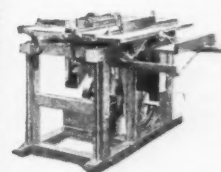


Fig. 134

Novo Saw Rigs save their cost on the first average size job. Adapted to use of contractors, carpenters, builders, engineers, etc.

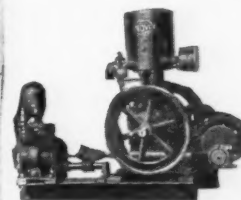


Fig. 14139

Novo Pumping Outfits have stood the most severe tests. We have specialized in power pumping outfits.

BY their record of performance under most trying conditions, Novo Engines and Outfits have been adopted almost universally as standard by contractors, engineers, manufacturers and all kinds of power users. Our book, "Standardized Power," explains and illustrates the adoption fully. It shows why you should accept Novo Standardized Power if you haven't already done so. Your copy will be sent upon request.

NOVO ENGINE CO.
 Clarence E. Bement, Vice-Pres. & Gen. Mgr.
 796 Willow St., Lansing, Michigan
 Lytton Bldg., Chicago, Ill.

We do not manufacture mixers, but 85 per cent of mixer manufacturers furnish their mixers with Novo Engines. We will gladly furnish, upon request, the names of manufacturers who use Novo Engines as standard equipment.

(Continued from page 136.)

Chicago face—a face typical of hurry, possibly worry. An acquaintance recently spoke of the Methodist face as being solemn and forbidding. Being a Methodist, I resented the slur.

I fear that I have discovered the WAR face. I see it everywhere. In Chicago offices, among workmen on skyscrapers; in the smaller cities with employer and employe there is a knowing seriousness of expression. Men talk less in the cars and at the noon hour. They seem to think more, to meditate and ponder. There is much less of frivolity—less of banter—less of froth and more of substance. That is all right. We want thinkers in the building game, in driving nails, operating hoisting engines, wording specifications; but we must not forget how to smile.

An expansive smile lubricates greatly, bridges many an unpleasant chasm, aids digestion and will put meat on the bones.

Especially to the man who has to provide the payroll, supply the material and carry the load of details, to him whose face gets fixed in set lines, I say, "smile, old top, smile." Look for the humor that is to be found in every predicament. Anyone can smile when everything goes his way. Be superior to that. Smile when everything goes dead wrong.

Sand in the Soul or Sand in the Gear Box

I don't embrace the opportunity of seeing many

plays. My days are full, evenings also, and I see so much of real tragedy, real comedy and real life every day as I rub shoulder with my fellows that I don't crave the "playing" to be seen on the stage.

Whether it is a wooden ham or a painted bunch of bananas or the best of acting, the unreal never equals the real.

However, many lessons can be learned from a good play. You probably have heard or heard of "The Man From Home," played by Hodge.

His sayings were full of pith, but I remember only one: "don't throw sand in the gear box." There is a disposition on the part of so many when their nerves get a little on edge to be cantankerous and they throw into the machinery, gritty substance in place of oiling it.

Today the great majority of people who do big things and many who attempt only small things are under stress.

Old conditions and old precedents are badly upset. Builders of certain types of structures have nothing to do. Builders of other types are rushed to the breaking point.

When a stream is muddy at its source, it is quite likely to be cloudy all the way. If the head of an institution doesn't keep sweet there is apt to be friction in every cog.

An employee does himself a gross injustice when

(Continued to page 140.)

Clean Air Heater

One Register System

Big Money for You

One installed sells many more. Buy direct from Manufacturer — Save Money — Secure Satisfaction.

- Efficient
- Economical
- Practical

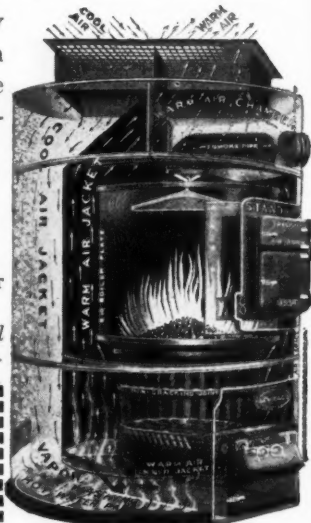
Guaranteed by Two Year Trial Bond.

Write Today for our Special Proposition to Contractors.

MAIL TODAY

Standard Heater Co.
438 W. Ontario St., Chicago
Send me your Special Agency Proposition to Contractors.

Name.....
Address.....



STANDARD HEATER CO.
438 West Ontario Street
CHICAGO

Read how the Modern Way Pipeless Furnace "did the impossible" for Mr. Sigrist. It will move you to send for our big folder which describes the furnace fully and contains many more enthusiastic testimonials like this—

Gentlemen:

Replying to your request for a picture of my house, and as to what I think of the Modern Way Furnace, will say that after using your No. 352 for 2 years, through some very cold weather, I find that it is capable of heating both my upstairs and down, entirely satisfactorily.

I have invited in some of my skeptical friends on some of the coldest days, and they are actually astonished to find that the house is not only warm and comfortable, but evenly heated as well. It doesn't consume much fuel. Our house has an average width of 30 feet and is 48 feet long. It has 32 windows, 4 glass doors leading to the porches. The ceilings are 10½ below, and 10 feet on second floor. There are 5 rooms and a hall upstairs.

Other heating companies told me that I would have to use hot water or steam at a cost of over \$450.00, while my Modern Way only cost me less than one-half this amount. It was installed in one day, does not cut up my house, nor spoil my cellar. To make a long story short, I know that I have THE Furnace of all Furnaces.

Yours very truly,

H. P. SIGRIST.
Beach City, Ohio.



Modern Way Furnace Co.
7th Floor Shoaff Bldg. Ft. Wayne, Ind.

If Every Reader of The American Builder Who Builds of Frame Would Fill in This Coupon

— we would know just what information to send you to enable you to build (any kind of building) of permanent, fire-resisting materials at the same cost as good frame construction. We believe every reader of the American Builder would prefer to use permanent, fire-resistive materials instead of frame, if he knew how and could do so profitably at the same cost. Hundreds of contractors are now doing it. So can you when you know how to use them as well as you know how to use the frame. We will show you how. Tell us in the coupon below why you do not use these modern materials. Is it because you do not know how to figure them? Because you do not know where to get them? Because you cannot get masons to do the work? Because the public does not want buildings so built? Or because you do not believe in such construction? Whatever your reasons are, please tell us in the coupon below, for we want you to help us reduce America's annual FIVE HUNDRED MILLION DOLLAR fire and depreciation loss.

THE PERMANENT BUILDINGS SOCIETY
Chamber of Commerce CHICAGO, ILLINOIS

MAIL IT TODAY, PLEASE

THE PERMANENT BUILDINGS SOCIETY
Chamber of Commerce, Chicago, Ill.

GENTLEMEN: I am building of frame construction for the following reasons:

I am figuring on the following buildings in frame (give size and number of stories) but would like to know how to use permanent fire-resistive materials instead, provided they cost no more.

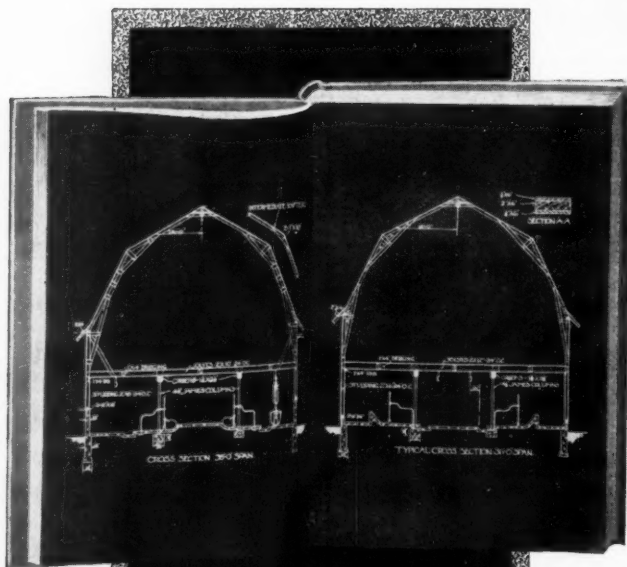
YOUR NAME

YOUR BUSINESS

YOUR TOWN

YOUR STATE

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Bigger Profits For Barn Builders

BACK your building skill with the scientific knowledge of our barn experts.

"The James Way" Book gives the practical, helpful suggestions for better barns and barn equipment. It advises as to the best location. Basing its advice on drainage, ventilation and best distance from other buildings.

Complete Dairy Barn Information

From cover to cover "The James Way" is filled with the best, most modern dairy barn facts. Including blue print plans for complete barns, floors,

windows, ventilation, etc. Showing **James Barn Equipment** the equipment used by thousands of dairymen and installed by leading builders everywhere

Write for This Book TODAY!

Just send us the names of farmers who intend to build or remodel, and for how many cows. James reputation added to your skill will do more to increase your income. Dairymen everywhere know the

name "James" to stand for the best in barn equipment. Get in touch with us as quickly as possible. We have some barn information that will help you land jobs and **beat competition**. Write us now.

James Manufacturing Company
EB75 Cane Street, Ft. Atkinson, Wis. Elmira, N. Y.

(Continued from page 138.)

he throws a monkey wrench into his employer's machinery.

A sneer, a suggestion that the boss is not on the square, urging a brother workman to make a kick on a fancied grievance, all these things clog the works and react.

The man that lays the material doesn't know the troubles of the man that pays the money.

The Kick Back

In northern Indiana a building was being put up under a bonus penalty contract, and a good workman from Cincinnati went onto the job.

He was one of the sort of fellows who thought it sport to turpentine a dog, who would go out of his way to step on a worm and lost no opportunity to stir up trouble. He made trouble on this job and got so many men at loggerheads that the contractor was shut off by his banker and pay was held up.

This man had a sickly wife and when the pay stopped for a while she was made quite ill. Mr. Trouble Maker's expenses at home were doubled.

Try as you may you can't get away from the proposition that as you sow so shall ye reap.

Sand in the Soul

But these are times when every ounce of grit a man has must be at his command. It doesn't take any more grit to go over the top of the trench and bomb Boches out of their trench than to pull some of our big building enterprises thru.

The country is on wonderfully solid financial foundation, but there is a conservatism with many banks, and lines of credit of many are being curtailed.

This is possibly because of over speculation and wild cat gambling in stocks by others. Whatever the cause one must have sand in his soul to keep a brave front and cool head in the face of danger.

I saw some verses in the Claxton Magazine, one of which was especially worth while:

"If your track is steep and hilly, and you have a heavy grade,
And if those who've gone before you have the rails quite
slippery made;

If you ever reach the summit of the upper tableland,
You'll find you'll have to do it with a liberal use of sand."

Rat Poison Would Be Cheaper

Some place themselves on the toboggan first physically and then financially thru worry.

There is nothing in the world like worry to wilt a man's prospects. There is nothing like worry to disorganize a man's internal equipment and external affairs. The man who starts from somewhere for Successville must lay his trip over the hilly road that goes thru the town of Hope and Faith also the hamlet of Plugville. The chap who permits his car to turn down the sandy road to Worrytown will probably be led thru Sickton and then into the town of Disaster.

(Continued to page 142.)

VENTILATION
Ventilation by the ROYAL SYSTEM is the only true scientific and economical ventilating system in use. So why use inferior ventilators.



EFFICIENCY

ROYALS draw the impure air upward and outward from all parts of the building. They are designed to do this. The process of exhausting foul air and substituting pure air goes on without interruption day and night. No wind, rain, sleet or snow can enter the building through the ROYAL. A constant circulation is maintained.

Our catalog gives all details. Write for it.
ROYAL VENTILATOR COMPANY
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Large Profit in Air and Light
The certainty with which **TIP TOP** Ventilators and! **TIP TOP** More Sun Windows decrease disease and losses and increase quality, production and profit deserves the attention of progressive dealers and contractors, as every stock raising farmer should have them.




PURE AIR
TIP TOP VENTILATOR
THE BEST STOCK CONDITIONER

This is an opportunity for all to be benefited financially. Make money and help your customers prosper. Act now. Dealers and contractors ask for our co-operative plan.

Anderson Mfg. Co.
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Get All The Profit
Profit is figured in two ways—that which you make on the job and the jobs your reputation brings you. Get both profits by recommending and equipping the barns you build with




Heavy Galvanized Steel CUPOLAS

They are easy to erect—shipped ready to install. Absolutely Bird, Storm, Rust and Rot proof. Neat in appearance. Every owner realizes the importance of proper ventilation in his barns. **O-K Cupolas solve the problem and sell themselves.** Every one you erect adds to your reputation. **Special prices to Contractors, and Builders where we are not represented.**

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Churches

The average church is ventilated poorly, if at all. Carpenters find it profitable to recommend the installation of

"GLOBE"
VENTILATORS


because they are not only simple, strong, long-wearing and absolutely silent, but because they operate so efficiently and harmonize so well with the architectural features of every church building.

And every installation means an attractive profit to the carpenter.

For information address Department F.

Globe Ventilator Co.
TROY, N. Y.

HERE'S A VENTILATOR THAT WILL GIVE REAL SERVICE ON ANY TYPE OF BUILDING



WILLIS VENTILATOR STYLE NO. 125
Simple in Construction Attractive in Appearance
Built to give real ventilation service under all conditions. Designed on principles gained from 25 years satisfactory ventilating experience. Manufactured from the best quality, heavily galvanized iron, in gauges best adapted to the size of the ventilator.

Definite Net Prices Furnished Promptly Upon Request

Write for a copy of our general Catalog No. 7. This book covers every requirement you may have for Sheet Metal Building Materials and will be found a very handy addition to your reference files.

Department "B"

WILLIS MFG. CO. GALESBURG, ILL.
Manufacturers of a Complete Line of Sheet Metal Building Products

(Continued from page 140.)

Cork your worry when it first calls because no good can come from it.

Painted Buttons for Eyes.

One of the marvels of my home town when I was a youngster was a blind man who was able to get around quite well in spite of his affliction. He would be guided to the curb by his cane and listen carefully for approaching vehicles. When the way was free he would easily cross.

I have often wondered what he would do in this day and generation when the vehicles sweep by at five times the speed they formerly did and are gumshoed and noiseless. Painted buttons would not answer for eyes to any man today.

People must not only see things but they must be aware.

A builder cannot be a good builder unless he sees everything to be seen.

Observation is the basis of true education. It always has been and always will be that people don't use their eyes until they begin to be dim. It is one of the ironies of life that we don't appreciate our blessings until we begin to lose them. I see more now than I did when I was twenty years younger.

Why can't YOU, Mr. Young Reader, get the benefit of your eyes from now on. See the thing to be done and see how to do it.

See the way to serve. If your boss is the contractor, giving full measure will never hurt you. If your boss is the owner and you are the contractor your future depends on the service given.

Lest Ye Forget

The latest government report shows a prospective increase of 608 millions of bushels more corn in 1917 over 1916, but there will be none too much. Millions of bushels are wasted annually because of the slackness of the farmer.

It is the duty of every builder to do his best to have wanton waste eliminated.

Show any who hesitate the picture which our artist presents of a scene to be found many places in America within a few months.

Lest ye forget, I repeat that the man who allows one grain of food to waste or one food producing animal to lower its product is not a patriot. Within ninety days the cold wind will blow, the sleet and rain will destroy what might have been a profit for the procrastinator. He will belong to the class of those who wept and gnashed their teeth because they had not bought oil.

He will apply his boot to his posterior because he did not contract early enough for his silo and barn.

Prevent it as much as you can.

Yours truly,

THE MAN FROM THE LUMBER YARD.

Learn to Be a Draftsman and Draw Your Own Plans

By means of these two books the contractor, builder or carpenter can advance by easy steps from the first principles of drafting room practice to the complete work of an architect's office, including drawing to scale, tracing, detailing, lettering, rendering, designing, etc. He can combine the work of the architect and builder. He will learn not only how to plan the structure, but how to lay out the work, specify the materials and finish, make the contracts, and take complete charge. A complete set of plans with every dimension, all sizes of windows, doors, etc., is shown in these books. This serves as a guide as it shows the process from the preliminary sketch to the finished plan.

Radford's "**Mechanical Drawing**" is a book of 272 pages, with 165 illustrations, and a supplement showing perspective views and floor plans of 41 brick, cement and frame residences.

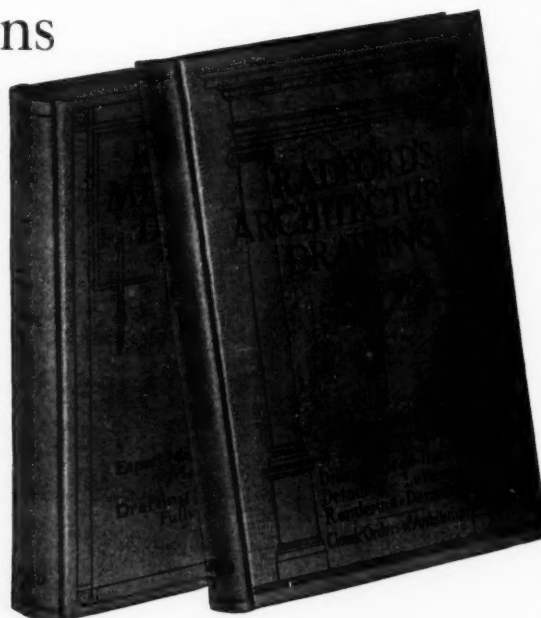
Radford's "**Architectural Drawing**" is a book of 304 pages, with 147 illustrations and a supplement showing perspective views and floor plans of 41 brick, cement and frame residences.

Each book is printed on high-grade paper, bound in cloth, is 6x9 inches and has a beautiful illuminated cover.

Don't Depend on Another Man's Brains

Develop your own ideas. Be in a position where you can work a customer's hazy suggestions into a tastefully arranged, complete plan, showing all dimensions.

One of these books and a year's subscription to the American Builder for only \$2.00, the regular price of the magazine alone. Both volumes and a year's subscription for \$3.00.



American Builder, 1827 Prairie Ave.
CHICAGO



"Looks well"

Canton Coal Chutes will please your clients because they look well. A man has a justifiable pride in the appearance of his home. That is why we have taken pains to make "outside appearance" one of the strong features of the Canton Chutes.

Durable and Efficient

Canton Chutes are extremely practical in design—are easy to install. There is an automatic locking device and also an independent outside lock.

The use of only the best materials, and its all metal construction insure the best service through years of hard usage.

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The Enterprise Coal and Fuel Chute



A POPULAR Coal-chute for every building and at a popular price.

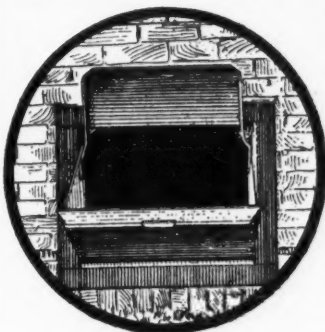
Conceded by all odds to be the easiest installed, easiest operated, and simplest Fuel-chute made—four pieces only—and a Complete chute: Frame, Chute, Lock, and Weight, which locks automatically by gravity.

Good money for the Contractor or Builder in any community.

Circulars and prices for the asking. Write today to

Enterprise Iron Works
Albert Lea, Minnesota

KEWANEE ALL-STEEL COAL CHUTES



Five good reasons for installing the Kewanee. It locks automatically on the inside. Can be opened from the first floor by means of a chain in the lock. All steel construction, and cannot be broken. Guaranteed for five years. Easy to install in an old building as well as a new.

Write today for Contractors' and Dealers' Prices

KEWANEE MFG. CO.
KEWANEE, ILL.



"Instruction by correspondence is the cheapest and best way for the poor man"

Thomas A. Edison

Edison is Right!!!

You admit the International Correspondence Schools are a good thing. You'd take a course right now "if"—"except"—

"If" what? If you weren't so "overworked," with such "long hours," or had more strength and energy?

Wasn't it Edison who stayed up half the night to educate himself in spite of every handicap you could ever have?

All big men who have made their mark in the world had the *ambition*—the *determination*—to improve their spare time, to train themselves for big work. You, too, can possess power, money and happiness if you'll only make the effort. The reward is great—it's worth it.

Here's all we ask: Merely mail this coupon. Put it up to us without paying or promising. Let us send you the details of others' success through the I. C. S., and then decide. Mark and mail this coupon now.

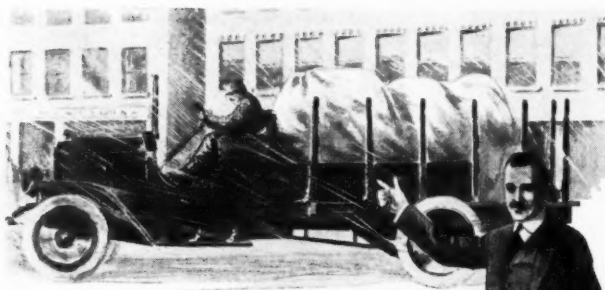
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Explain, without further obligation on my part, how I can qualify for the position before which I mark X

- | | |
|---|--|
| <input type="checkbox"/> ELECTRICAL ENGINEERING | <input type="checkbox"/> ADVERTISING |
| <input type="checkbox"/> Electric Lighting | <input type="checkbox"/> Window Trimming |
| <input type="checkbox"/> Electric Railways | <input type="checkbox"/> Show Card Writing |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> Lettering and Sign Painting |
| <input type="checkbox"/> Telephone Expert | <input type="checkbox"/> ILLUSTRATING |
| <input type="checkbox"/> MECHANICAL ENGINEERING | <input type="checkbox"/> DESIGNING |
| <input type="checkbox"/> Mechanical Drafting | <input type="checkbox"/> BOOKKEEPING |
| <input type="checkbox"/> Shop Practice | <input type="checkbox"/> Stenography and Typewriting |
| <input type="checkbox"/> Gas Engines | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> CIVIL ENGINEERING | <input type="checkbox"/> Railway Accounting |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> Commercial Law |
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| <input type="checkbox"/> STATIONARY ENGINEERING | <input type="checkbox"/> English Branches |
| <input type="checkbox"/> Marine Engineering | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> ARCHITECTURE | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Building Contractor | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> Architectural Drafting | <input type="checkbox"/> POULTRY |
| <input type="checkbox"/> Concrete Engineering | <input type="checkbox"/> Textile Manufacturing |
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| <input type="checkbox"/> PLUMBING AND HEATING | <input type="checkbox"/> Chemistry <input type="checkbox"/> German |
| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> AUTO RUNNING <input type="checkbox"/> French |
| <input type="checkbox"/> SALESMANSHIP | <input type="checkbox"/> Motor Boat Running <input type="checkbox"/> Italian |

Name _____
Present _____
Occupation _____
Street _____
and No. _____
City _____ State _____



"No more of that for my truck drivers"

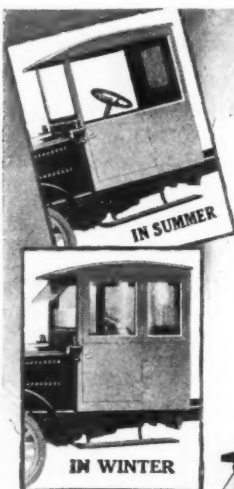
"My new Kissel Truck with the ALL-YEAR Cab gives them full protection in wet and stormy weather and keeps them warm and comfortable in the winter."

New Kissel All-Year Cab

Insures All-Year Comfort for Drivers and Increased Results for Owners

The new ALL-YEAR Cab is revolutionizing truck driving in the carpentering and building trade. It protects drivers in winter weather—increases their efficiency—discourages speeding—diminishes accidents—keeps trucks in operation the year round regardless of weather.

In its summer form it is a cool open housing. In winter the ALL-YEAR Cab is quickly changed into a warm, dry, closed weather-proof cab—by adding the winter attachments.



KISSEL TRUCKS

A Truck for Every Purpose

Unusual strength, power and durability are some of the characteristics of the 5 new Kissel Truck Models designed and built to meet economically and efficiently the present day haulage and delivery requirements in the carpentering and building trade.

See our Kissel dealer or write us for literature on the new Kissel Trucks and the ALL-YEAR Cab.

Kissel Motor Car Company
Hartford, Wis., U. S. A.



Lumber Is Not High

(Continued from page 69.)

was worth from \$10.00 to \$20.00 so that it required forty hogs at \$18.00 to buy the barn since—

40 Hogs at \$18.00 = \$720.00.

"In 1917 our price had increased to \$1000.00 cash, but hogs had advanced to from \$40.00 to \$45.00 each so that it only required twenty-four to buy the barn since—

24 Hogs at \$42.00 = \$1008.00.

In 1914		In 1917	
705 bu. wheat at	\$1.00 \$705.00	351 bu. at	\$2.85...\$1000.35
1250 bu. corn at	.58 725.00	621 bu. at	1.62... 1006.02
2220 bu. oats at	.32 710.00	1550 bu. at	.65... 1007.50
1710 bu. barley at	.42 718.00	1350 bu. at	1.35... 1005.75
1000 bu. rye at	.70 700.00	416 bu. at	2.42... 1006.72
527 bu. flax at	1.35 711.45	308 bu. at	3.30... 1016.40

Barn cost.....\$705.00 Barn cost.....\$1000.00

Another ad with the same illustration has the slogan, "THE BEST BUILDING TIME IN YEARS," and below the following is presented:

"In 1914 it took 705 bushels of wheat to buy this barn, while at the present time it only requires 351 bushels to buy it!

"Values have readjusted themselves during the past twelve months. Your products have very nearly tripled in value, while lumber is ONLY SLIGHTLY ABOVE NORMAL. NOW IS THE TIME TO BUILD.

Now is the Time for the Farmer to Build

"Explanation: In 1914 Thompson Yards' price on Barn Design No. 404 was \$705.00 cash, while the average price of wheat was \$1.00 per bushel. It, therefore, required 705 bushels to buy the barn since—

705 Bushels at \$1.00 = \$705.00.

"In 1917 our cash price on the same barn had advanced to \$1000.00 cash, but wheat had advanced to an average of \$2.85 per bushel (first six months), so that it now requires but 351 bushels to buy the barn, since—

351 Bushels at \$2.85 = \$1000.35."

This seems like the right approach for selling all building materials and farm building equipment this year.



Testing Paint Materials

(Continued from page 61.)

occurs, condemn the oil. Flow a sample on one of the clear glass pieces, note the time of application and amount of time required to harden. The oil should be free from all feeling of tackiness in three days or less.

Testing Turpentine

Turpentine should be tested for oil adulteration by letting a drop fall on a piece of pure white paper.

(Continued to page 146.)

"Garage with Pergola Features"

and other suitable things for beautifying home grounds.

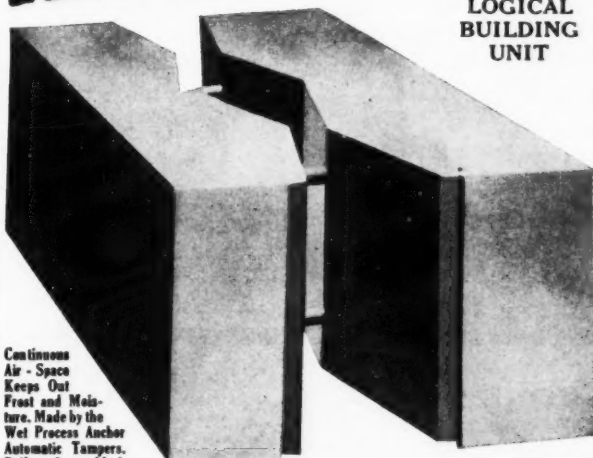
If interested enclose 10c and ask for Catalog No. "U-30."

**Hartmann-Sanders Company**

Chicago Office, 2155 Elston Ave. New York City Office, 6 E. 39th St.

ANCHOR BLOCKS

YOUR
LOGICAL
BUILDING
UNIT



Continuous
Air - Space
Keeps Out
Frost and Moisture. Made by the
Wei Process Anchor
Automatic Tampers.
Built to fit any block
machine. Write for Big Catalog and Special Offer to Contractors & Lumber Dealers

ANCHOR CONCRETE STONE CO.
ROCK RAPIDS, IA.

**For a Clean Cut Job—
The Stearns
Floor Scraper**

IT IS WORK on large surfaces that is the true test of a floor scraper. Such a test The Stearns Floor Scraper is everywhere meeting successfully.

Your floors won't suffer if you insist on the

Stearns

FLOOR SCRAPER

There will be no wavy effects—no wheel tracks. Made with rubber tires and movable handle, the Stearns can get close up to the wall and into every corner. When one edge of the two-sided, high grade, carbon-tempered steel scraper knife is worn the other edge can be used.

For your floor's sake and greater floor profit, insist on the Stearns.

E. C. STEARNS COMPANY

112 Oneida Street

Syracuse, New York

**IF YOU DO NOT FIND
WHAT YOU WANT**

in the AMERICAN BUILDER, write
us and we will try to get it for you.

**No Ice Needed—in Winter
Filled From the Outside in Summer****The Herrick Outside Icing Refrigerators**

Most Popular for Modern Homes

Saves more ice, gives more space in the kitchen and does away with the tracking of floors.

This refrigerator requires no ice in the winter. It is cooled by cold air. The Herrick is so constructed that a compartment may be opened from the outside of the house. Cold air thus enters the opening, forces circulation and keeps the contents of the refrigerator cold and pure.

And we furnish FREE PLANS showing how the Herrick saves a great deal of kitchen space by being built into the wall so that only the front is visible. The housewife will appreciate this saving just as much as the ice-saving feature. And here is another point equally important: The Herrick does away with the annoyances of the iceman's visits to the kitchen and the soiling of the floors by his always muddy feet and dripping ice. Any woman who takes pride in a tidy kitchen will not only be interested in—but will demand the Herrick.

No progressive builder can afford to be without information on this modern convenience. Suggest it to your customers before they suggest it to you. It will add to your reputation as a conscientious, up to the minute builder and will get you more jobs. Write for our free plans and our complete catalog.



HERRICK
DRY AIR SYSTEM
REFRIGERATOR

The Herrick is Approved by Good House
Keeping and New York Tribune Institutes

Herrick Refrigerator Company,

Waterloo, Iowa

(Continued from page 144.)

If not contaminated by a mineral oil the spot will dry free from greasiness and clean. Test with aniline oil as for mineral adulteration of linseed oil.

Testing White Lead

White lead and white zinc can only be accurately tested by a chemist, as such work is complicated. If the contractor is careful, however, he can make a fairly accurate test of white lead by washing a small sample with benzol to remove the oil and letting dry on a piece of white blotting paper. When the oil and benzol have all evaporated, place a small quantity of the dried powder in the hole made by twisting a nickel edgewise on a block of charcoal. This lead should now be reduced with a flame from an alcohol lamp and blow pipe or that from a blow torch. If pure, nothing but a small globule of metallic lead will be left in the hole in the charcoal. If a white residue or scum forms over the lead, do not use that brand of material from which the test sample is taken.

Testing Zinc White

Zinc white should be washed with benzol and the latter poured off several times to remove all traces of oil. Warm the test tubes carefully to remove all benzol remaining and then treat the sample of zinc oxide with concentrated acetic acid. If pure, the oxide should be completely soluble in the acid. If an

insoluble portion remains, even after boiling when the tube is heated, condemn the brand of zinc as unsafe to use or else send the sample for analysis to determine how serious is the adulteration. Zinc oxide is high priced at the present time, but very essential in a paint formula.

Testing Japan Driers

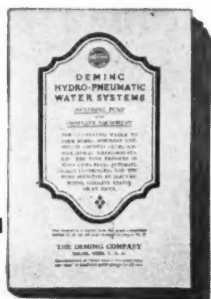
In testing japan driers recourse can be had to the use of the paste made from drier and moisture free litharge. High class driers will not thicken or harden under three or four days; cheap rosin driers will harden in twenty-four hours or less in direct proportion to their cheapness. Choose a turpentine drier which produces a good drying action in three days.

Testing Color Pigments

Pigments for coloring or tinting should be tested very carefully. A one-gram sample should be very accurately weighed out and reduced with nine grams pure zinc oxide, well mixed with a muller or spatula and carefully spread as a ribbon on glass. Two different brands should be tested simultaneously and the two ribbons placed side by side for comparison. By backing up the glass with pure white blotting paper, a good idea of the comparative value of the tinting strength can be secured of the two samples. That sample which will stand the greatest reduction to produce a desired tint should be chosen as the finest ground and purest material.

Team-work with your local plumber—

Send
For
Free
Bulletin



FREE

DON'T consider the job as finished for you until a water system is installed. You sell your customer the idea, your plumber makes the installation—you both get a profit from

DEMING WATER SUPPLY SYSTEMS

THE DEMING CO., 99 Depot St., Salem, Ohio

Chicago: Henion & Hubbell

Pittsburgh: Harris Pump & Supply Co.

Hydro-
Pneumatic
No. 2010
Capacity—
570 gallons
per hour



Agencies in All Principal Cities

Please send
Water Supply
Hand-book

Name

Address (99)

All Steel and Caldwell-Made

—Two important things to consider in buying a Tank and Tower.

The all-steel quality of the Caldwell Hemispherical Tower combined with the correct design and scientific construction by men who have been at it for nearly thirty years, naturally result in long life and satisfaction.

Send for Catalogue

W. E. CALDWELL CO.
Incorporated
1990 Brook St.
LOUISVILLE, KY.

Caldwell
TANKS
AND
TOWERS

Rust-proof nails

—the kind you must have if your nails are going to last. One wise building authority made the statement: "No work can live longer than the nails that hold it." Many so-called "galvanized nails" on the market are not rustproof. They are not thoroughly galvanized and consequently do not withstand the weather any considerable length of time. M. I. F. Co. Zinc Coated nails are heavily coated with pure zinc. We have many cases on record where M. I. F. Co. Zinc Coated nails driven more than 30 years ago are still in as good condition as they were at the time of construction.

MALLEABLE IRON FITTING CO. Branford, Conn.

When Barns Are Full It's Easy to Install
MYERS HAY TOOLS

Contractors and Builders: Remember the name **Myers** on a Hay Unloading Outfit is a guarantee of Quality, and whether installed during the summer or winter months, a Myers will give excellent service in the unloading of hay or grain from the rack into the mow or into the stack—we merely recommend the fall and winter months for installation because mows are filled to the roof and the work can be accomplished easier and quicker.

When you build new barns or remodel old ones be sure they are equipped with a complete **Myers Outfit**, Unloader, Forks or Slings, Tracks, Pulleys and Fixtures, for the Myers Line has a background of friends in every hay making community that have been gained and retained year after year through their excellent unloading service—capacity, ease of operation and uniform performance. Catalog gladly mailed.



F. E. Myers & Co.
 Ashland, Ohio

Manufacturers of
Myers Pumps
 For Every Purpose
 Hay Tools and
 Door Hangers

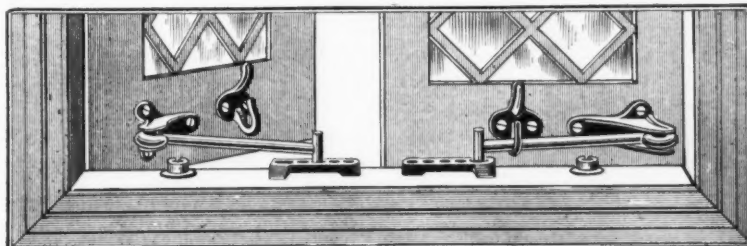
**HAND
 FORGED,
 INDIVIDUALLY
 TEMPERED**



**GERMANTOWN
 MASTER BUILDER**

Broad Hatchets, like all other "**Master Builder**" tools, are absolutely right in design, quality of material and workmanship. They are made for the man who wants a tool that he can depend upon in any emergency. Every one of them, before leaving our factory, is subjected to a special test many times as severe as the tool will ever undergo in actual service. Perfectly balanced; second growth hickory handle; the thin bit with swell bevel throws a chip and prevents wedging. "The Best That Money Can Buy." **\$1.50 and \$2.00 each.**

Germantown Tool Works, Philadelphia, Pa.
 Branch: 62 East Lake Street, Chicago



Superior Shutter Fasteners bring shutters back to their own. They make the opening and closing of the shutters a simple task, quickly accomplished. Shutters can be bowed at any angle without danger of being torn off the hinges by the wind. There is an arrangement for locking the shutters back against the house. Shutters lock from outside if necessary.

Builders, carpenters, contractors. Let your clients have shutters again. Show them how easy shutters are to handle when they are "Superior equipped." Write us for full information and prices.

THE G. F. S. ZIMMERMAN CO., Inc., Frederick, Maryland

**You Can't Afford to Be Without
 "Nice" Liquid Filler**

BECAUSE it means an economy of both time and material to you.—It requires little, if any, sand-papery and dries hard in 8 to 12 hours, allowing one-coat-a-day work to be done with safety.—It will enable you to make first-class jobs on close grained woods with one coat of filler and one coat of varnish.—It will hold out varnish better than shellac and will cover 800 sq. ft. to the gallon.—It will make the very best Flat Stain by simply shading with colors in oil or a varnish stain by adding a little good mixing varnish. It is very valuable as a first coat for floors to bring them up to an even surface.—It helps the user over many a difficult place and adds to the quality of his work.

Be sure you get the genuine "Nice" Filler. Ask your dealer to show you Nice or write for our prices and catalog of varnishes, paints, coatings, fillers, enamels, etc.

Eugene E. Nice Philadelphia, Pa.

LINOFELT

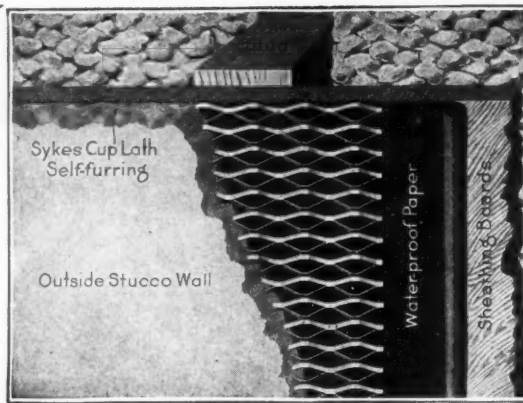
"Between You and the Weather"

(Copyright, 1914, Union Fibre Co., Winona, Minn.)

Perfect building quilt for all buildings. Keeps out cold in winter and heat in summer. Wears longer—saves 40% on fuel expense.

CONTRACTORS—Use Linofelt to insure best results. Catalog describing Linofelt, Waterproof Lith, Union Cork Board, Fibrofelt, sent **FREE**.

UNION FIBRE CO., 118 Union St., Winona, Minn.



The Cup That Grips!

The Sykes Cup holds the stucco tight. It saves in construction cost because it makes furring strips unnecessary. It gives added strength and rigidity.

SYKES Expanded Cup Metal Lath

(Self-Furring)

is heavier than other metal laths of same gauge because Sykes is cut with wider strands.

Sykes is best for interior as well as for overcoating and stucco work. Approved by U. S. Government for Post Office work; indorsed by architects and contractors. Free booklet on Stucco Specifications. Write to

Sykes Metal Lath & Roofing Co.
504 River Road Warren, Ohio



ARTISTIC HOMES

A book of 280 (8 x 11 inch) pages showing perspective views and floor plans of 250 artistic modern homes. A large variety of designs are given so as to meet the taste of the majority of home builders. There are artistic houses for people of moderate means and others for the more wealthy, but in every case the design is made with reference to comfort and economy.

Every design shown has been made by best architects in the world, who have made a study of home architecture and that alone.

Price \$1.00 Postpaid

American Builder

1827 to 1833 Prairie Avenue, Chicago, Ill.

How to Do Work Right

(Continued from page 70.)

seen it done time and again, and the results were, of course, accordingly.

Jointing the Jambs Necessary

The jambs should be jointed perfectly straight before plowing or sizing, as the small margin that is generally allowed for play, is not ample enough to take care of any curvature in either sash or jamb. The jambs should also be straightened sidewise. This is usually done by nailing on the casings except in box frames as for brick or concrete work, when all parts should be jointed perfectly before assembling. The frames should also be made the proper length and width, as any great variations in this part will affect the proper actions and service of the window sash.

For standard two-light windows the mill books prescribe $4\frac{1}{8}$ inches allowance in width over the glass size, but I find during my 14 years of experience that it is safe to allow an extra $\frac{1}{8}$ inch, as the sash always run full and otherwise require considerable trimming, which tends to weaken the sash; and they are frail enough at the best. If made much wider there is chance for the sash to slip the stop. For length the good book recommends 6 inches over entire glass size. This is proper and allows a fair margin for fitting. This length must be taken along the inside edge of the parting stop. The distance between the blind stop and parting stop should be $1/16$ inch over the thickness of the sash. Less than that might cause them to bind; more allows them to rattle.

Pulleys and Pockets

The pulleys should be put in the center of the channels for the sash, otherwise they will not enter the grooves which are made in the upper ends of the sash for that purpose. The question of whether or not to put in subsills is debatable, as strong arguments can be brought forward for either side; but either way, the sills or sub, as the case may be, should be nailed between the jambs instead of under them, as some mills do. This practice is a mighty poor way of doing an important part of the work, and the only argument in favor of it is cheapness, and there are many important ones against it.

Architects and owners of buildings should insist that window frames be provided with pockets, as in this day of keen competition and cheap construction there prevails a tendency to omit this part of it; but after the ropes break and the carpenter has to either take off a casing or cut in a pocket, the owner is a lot poorer but wiser. *And ropes do break.*

The level of the ends of the pocket should be towards the top from the face of the jambs, otherwise there is a chance for the sash to catch on the ends if they project in the least. The drop or pitch of the sills in most windows is not enough, as they generally have about

(Continued to page 150.)



"Simonds"

"Sure!"

"I have never used any other kind since I first had this one in my hand, thirty years ago."

"There are two very good reasons why I have never used any other saw—because I

have never seen one better than a Simonds and because I can't afford to use one that is not as good."

That's the Truth About Simonds Saws

The manufacturers have used every means to keep Simonds Saws the finest on the market—steel is made in their own factories and is tempered by their own special process—high class workmanship on every saw.

You can depend upon a Simonds for accurate cutting—for "wearability." They will stay sharp.

Ask your dealer to show you the Simonds Saws. The price is reasonable—the quality unquestionably the finest.

Have you got our Carpenter's Guide Book? If not let us send it to you.

SIMONDS MFG. COMPANY
FITCHBURG, MASS.

STA-DRI

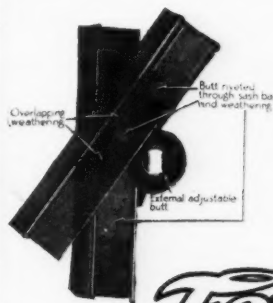
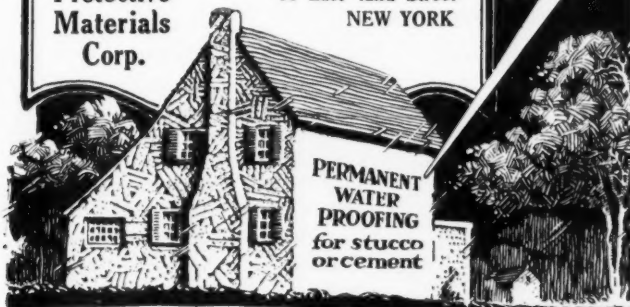
A LIMPID, practically odorless liquid that will permanently waterproof your stucco and cement buildings without the slightest discoloration of these surfaces.

The cost of *Stay-Dri* does not exceed one-half cent per square foot and the application of it, especially by spray is very economical.

We will be glad to mail complete information on *Stay-Dri* to builders who are interested in it as a profitable business.

**Protective
Materials
Corp.**

51 East 42nd Street
NEW YORK



EXTERNAL ADJUSTABLE BUTTS—The Fenestra Butt is guarded against loosening by being *double riveted through sash bar and weathering*. The mere turning of a nut allows ventilators to be adjusted or removed from the sash at will. Early types of butts were clamped on or riveted only to the weathering and allowed no adjustment.

Detroit Steel Products Co.

2916 E. Grand Blvd., Detroit, Mich.

Fenestra
SOLID STEEL WINDOWS

One-Ton with Three-Ton Efficiency



The Martin Fifth Wheel

makes possible this combination of a 1-ton Packard and a 3-ton Fruehauf trailer.

Write for further information

MARTIN ROCKING FIFTH WHEEL CO.
SPRINGFIELD, MASS.

BERGER'S Raydiant

IF YOU USE BERGER'S Raydiant Roof Lights on your roof and floor lights in your floors beneath, you will have daylight diffused from roof to basement without reducing valuable floor space.

The Raydiant System is simple, strong, durable, watertight and easily installed. Glass accidentally broken are quickly and easily replaced in our "Special" system, permitting an installation to be kept in perfect condition at small cost.

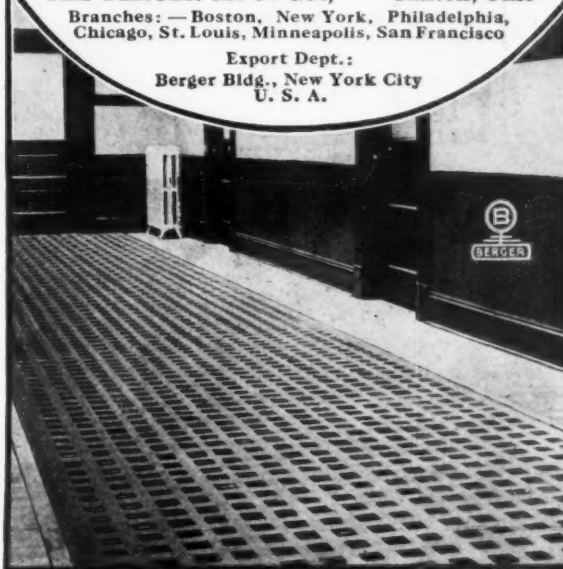
Write for Catalog T. A. B.

THE BERGER MFG. CO., Canton, Ohio

Branches: — Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

Export Dept.:

Berger Bldg., New York City
U. S. A.



(Continued from page 148.)

1 inch fall in 10 inches, when they should have at least 1 inch in 6. The advantage in this is that it will drain the water better and consequently not rot so easily. There is also not so much danger of rain beating in under the sash and stool and running down the inside of the room.

Squaring frames with the steel square or a stick and then sawing the casing to fit is an uncertain process, as the jambs usually cannot be depended upon to be straight before the casing is nailed on, and consequently do not true up. A better way is to cut the casing square, and if cut to proper length, this will square the frame. Then, when setting the frames the sills are leveled, and the casing plumbed, and the cut will fit perfectly.

Fitting the Sash

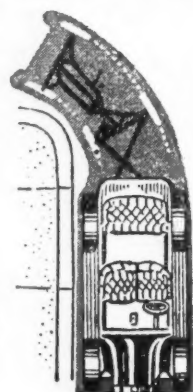
Commencing with the top sash the lugs should be cut off flush, then try for width at both ends, laying the sash flat on the sills. Pay no attention whatever to center, as the casings will straighten the jambs. There should be a strong $\frac{1}{8}$ inch play. If necessary, dress both ends to width, working equally from both sides. Then straighten the sides, leaving them the least bit hollow. Many carpenters size the ends and leave the middle high, and then wonder why the sash drag. Now, notch the check rail for the parting stop. This should be just a little less than the projection of the parting stop from the jamb. This work must be done just right and not any old way, as some do, re-

gardless of whether they get a quarter or a half inch more than necessary, for here is where the cold comes in.

If the holes in the sash are not deep enough to receive the knot on the rop, take a $\frac{7}{8}$ -inch bit and bore them deeper, as a projecting knot will make a sash work hard; also, if the groove is not deep enough, dig it out. Give the sash a fair chance. If it is possible to avoid it, and it generally is, never nail a sash cord into a sash, for it is the most aggravating thing to take out. If the rope is put in properly it doesn't require nailing.

After the top sash is in, size the lower one for width, set in place and find the distance the tops of the check rails are apart. Better measure both sides and if there is any difference measure in the center, as here is where the sash lock sits and the check rail should be flush. The measurement taken here gives you the amount to be trimmed off at the bottom. If possible, scribe the sash to the sill with a scriber or a pair of dividers and bevel the sash the least bit more than the pitch of the sill. It is important that the sash fit tight on the outside to exclude rain and cold. This can't be done if the frames are made too long. Many carpenters fit the sash bottom with a plane, but if I can scribe the sash on the outside I wouldn't give 10c for all the planes in the country for this work, as I could do a better job with my rip saw. If the sash can't be got-

(Continued to page 152.)



--a trailer that "trails"

Simplex Trailer

It follows the "trail" of the automobile so positively that both vehicles can turn in a twelve-foot circle. It isn't necessary, with a Simplex to take to the middle of the street to avoid bumping into curbs or swinging the trailer into everybody's way.

The Simplex is ideal for the contractor who wants to get the most out of his automobile. He can preserve the appearance of his car for pleasure; and at the same time put it to work. Any automobile that will average 20 miles will carry the Simplex along at the rate of 19 miles. Write for our catalog.

Simplex Short-Turn Trailer Co.
AUBURN, IND.



Hurry it up!

Order!

WE CAN assure you prompt delivery on a Miami Trailer if we get your order in good season.

This Miami Trailer was designed and built for Contractors and Builders. Body of Ohio Oak, steel lined, double end gate dropping to floor level which permits the hauling of material up to twenty feet in length.

Special shock absorbing draw bar which protects your machine from all sudden shocks and vibration. Special constructed chassis that insures perfect trail with car.

The busy season is here and we are in position to make immediate shipments. Ask for prices and complete description of fourteen different models.

Miami Trailer Company

Troy, Ohio



—Attention CARPENTERS AND BUILDERS!

SHOGREN Metal Weatherstrips

will make an extra profit for you in your business, if you write us immediately regarding information on installing Shogren Metal Weatherstrips in your locality.

The Shogren Metal Weatherstrips are by far the most superior on the market today and are also the easiest to install. You can install Shogren Metal Weatherstrips in half the time of any other make. They embody every advanced idea plus an exclusive method of operation which has no equal and the prices are no higher than what every customer on your list can well afford.

Write us now for information

Without obligation, we will gladly send you complete data on the Shogren Metal Weatherstrips and how you can cash in on our proposition now. Write today.

SHOGREN WEATHERSTRIP CO.
14 East Jackson Blvd. CHICAGO, ILL.

THE EXPERT'S CHOICE FILE



Does twice the work of an ordinary file—in half the time. The Expert's Choice increases the value of your time by over 50%. By spending 25 cents you can make it back on your first filing job alone. It's in the Quality—in the cut of the tooth and in the length of the stroke.

Frank Luther, Chicago, says: "The Expert's Choice File files 18 hand saws and is cheaper at a cost of 50c than the ordinary file at any price."

You get your money back if the Expert's Choice does not prove to be the most economical file you have ever used. DELTA SAW FILES are made for fine or coarse teeth—also for that extra hard saw.

Buy your tools of the dealer who sells Delta Files. He is the quality man.

Trial Offer If your dealer cannot supply you, send us 15c, 20c or 25c for trial file, sent prepaid. Do this today—find out what a real file is.

DELTA FILE WORKS
PHILADELPHIA, PA.



Look for
This
Sign
at
Your
Hardware
Store

Builders' Course

A Practical Course for
Carpenters, Bricklayers, Plasterers,
Foremen, Superintendents, Contractors
and all other men in Building Lines

Plan Reading, Estimating Architectural Drawing Specifications, Contracting

Any man in the building lines can save many times the cost of this course on one job alone.



This elegant \$15 outfit and all blue print plans furnished FREE with instructions in Plan Reading, Estimating and Drawing.

To Succeed in any branch of the building business you must have a complete knowledge of plans and specifications. You must be able to estimate closely the cost of material and labor. Guessing won't do—you must *know*. This knowledge is what makes successful foremen, superintendents and general contractors. You can master these subjects by our new easy "Study-at-Home" method.

Your Spare Time is Enough

The same expert instructors who are so successful with hundreds of men in our Day and Evening Classes will guide you to a larger success. These instructors are among Chicago's leading Architects, Engineers, Estimators and Contractors. They prepare your instruction matter; they examine and approve your work. They are themselves in charge of real work—big work—and know exactly the training you need.

IF you are a CARPENTER, BUILDER, BRICKLAYER or MASON, you need this course—it will bring you higher wages.

IF you are a FOREMAN or SUPERINTENDENT, you need this course—it will enable you to become a successful contractor.

IF you are a CONTRACTOR, you need this course—it will help you to figure closer. It will eliminate mistakes and increase your profits.

No Books to Sell—All Blue Print Plans FREE

Here's Your Chance

Mark and Mail Coupon Today

Mark "X" opposite work in which you are interested. Without obligation on you we will send full information.

- | | |
|--------------------------|-----------------------------|
| — Architectural Drafting | — Building Superintendence |
| — Builders' Course | — Structural Steel Drafting |
| — Estimating | — Sheet Metal Drafting |
| — Plan Reading | — Reinforced Concrete |
| — House Planning | — Machine Drafting |
| — General Contracting | — Surveying (1017) |

Name.....
Address.....
Town.....State.....
College or Home-Study Course.....

CHICAGO TECHNICAL COLLEGE
1017 Lake View Building, Chicago, Illinois

(Continued from page 150.)

ten at to scribe on the outside, the next best thing is to set the dividers as before and mark on the inside. Then set the bevel square to the pitch of the sill and mark across the edges. Then take a straight stick and mark across.

Fitting the Stool

After the sash are in, the next thing is to fit the stool. This should be fitted so there is 1/16 inch space when

ROOFING SLATE SINCE 1869

Miners, Makers and Shippers of all Styles and Colors of Roofing Slate. Write for Prices.

RISING & NELSON SLATE CO.

Main Office: West Pawlet, Vt.

Branch Offices:

1088 Marbridge Bldg., New York City. 4 Post Office Sq., Boston, Mass.
Office and Yard, 2554 W. Harrison St., Chicago, Ill.

SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate*

SATISFACTION GUARANTEED in QUALITY and PRICE

Ask for Delivered Prices

J. K. HOWER Station **Danielsville, Pa.**

R. J. KICHLIN, Sales Agent

The Roof of Eternal Youth

SHeldon's SLATES

RED, GREEN, PURPLE, BLACK

Custom made to "fit" your Roof. A wide choice of distinctive Color Combinations. Quality, Price and Service unequalled.

F. C. Sheldon Slate Co., Granville, New York

ROOF SLATE

Of every kind. Black—also the varying delicate shadings and rich tones of Red, Green and Purple—clear and in mottled effects.

Structural Slate — Slate Blackboards

E. J. JOHNSON, Inc.

Quarriers of Slate

West 44th Street, NEW YORK

the sash is back tight against the parting stop. If less room is given, the sash will stick; if more, it will rattle and not be a good job. After fitting the stool I always put the apron on next and nail the two together solid. Then I scribe and fit the casing onto the stool. When I get a fit I know it will stay. Some mechanics leave the apron till the last and nail the stool to the casing from below, but I have noticed when casing up twin or triple windows in this fashion that it required a 2 by 4 pry to bring it up in the center, and after all the nailing was done the casings didn't fit a little bit.

When nailing on stops it is important that both sash be closed tight, as the check rail is generally a little thicker than the parting stop, and if not together when stop is nailed on it will bind when closing window. On the other hand, the stop can be nailed up close and then when sash is raised it will have ample room. Some recommend dressing the check rail, but for various reasons this is not the proper thing to do.



Concrete Beams for Supporting Long Porch Spans

(Continued from page 85.)

These lintel beams should be designed as ordinary reinforced concrete beams for the floor or roof live and dead load they support in addition to their own weight. For a single span the moment in foot pounds will be equal to $\frac{1}{8} wl^2$, where w is the total load (both live and dead) per foot of beam and l is the clear span length in feet between supports plus 1 foot. Where lintel beams are built continuous over one or more supports the moment at the center is decreased, but a negative moment is developed at the supports which must be taken care of by providing reinforcing bars in the top of beams at those points. These bars should extend at least one-fourth the span length each side of the support over which the beam is continuous. In ordinary residence work, however, where there are seldom more than two spans continuous, it will be found good practice not to figure on the decreased moments due to continuity, but to assume that a moment of $\frac{1}{8} wl^2$ will be provided for at the center of beam in bottom and over the center support in top of beam. This will give an excess of steel over theoretical requirements at the center between supports, but in such work where men are not always the most experienced kind, in reinforced concrete, at least, it is best to have a little excess of resisting moment.

Before the total bending moment can be computed it is necessary to assume a tentative size of beam and this can be done by taking the end shear due to superimposed loads and dividing it by a low value of unit shear (as later explained) and finding the necessary cross-section. If on computing the moments and stresses the latter are too high a new section must

(Continued to page 154.)



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Can Be Better
Than Its
Roof

No matter how well proportioned a building—no matter how well built—if the roof of that building does not insure absolute protection as well as perfect conformation to type—you would not want to be known as the builder.

BAYONNE Roof and Deck Cloth

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The **difference** in price is in the materials.

Therefore, the **cheaper** the price the **cheaper** the materials used.

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Labor costs from 25% to 50% of cost of materials.

So—it's very probable that roofing—then re-roofing with a **cheap** brand represents a cost far surpassing the original cost of a high grade, last-the-life-of-building brand such as



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New York

(Continued from page 152.)

be assumed and the beam recomputed. In small work the facilities for bending steel are inadequate or entirely lacking and for this reason the concrete sections of lintel beams should be sufficient to provide adequate shearing strength without stirrups—in other words, the unit shear on the effective depth should be kept below 40 pounds per square inch in the final design. In ascertaining the size of beam required preliminary to designing same it will be convenient to take the end shear due to superimposed load and divide it by a lower value of unit shear, say, 30 pounds per square inch, this lower value to take care of neglecting the weight of the beam. The section so found should be rechecked for unit shear after the shear due to the dead load of the beam has been added to the shear due to superimposed loads. The bending moment can now be found and the steel area required and the stress in the concrete ascertained as explained in the following example:

For purpose of illustration we will design a porch lintel on the basis just set forth.

Let span of beam 20 feet = clear span plus 1 foot.

Roof live load per square foot = 30 pounds.

Dead load of roof per square foot = 20 pounds.

Dead weight of concrete per cubic foot = 150 pounds.

b = limiting width of beam due to architectural design = 12 inches.

h = total required depth of beam.

Lintel to carry roof area equal to its length by 10 feet wide.

v = unit shear allowable = 40 pounds per square inch on effective section.

d = depth to center of steel.

Total load carried by lintel $W = 20 \times 10$ (50 pounds) + dead load of beam.

The size of beam not being known, the dead load is unknown, so that the live and dead load of roof only can be used to determine a tentative beam size for computation, and to make some allowance therefor a shearing stress of only 30 pounds per square inch will be used for the preliminary calculations.

Thus:

Total roof load on beam = 10,000 lbs.

End shear due to roof load = 5,000 pounds.

5,000

$d = \frac{5,000}{12 \times 30} = 14$ inches. Now assume that a

beam 12 by 18 inches overall will be needed, if the shear is to govern (it does not, as we find later).

The beam weighs 225 pounds per foot, so that the additional end shear due to its weight = $225 \times 10 = 2,250$ pounds.

Total end shear = $5,000 + 2,250 = 7,250$ pounds.

Unit shear on effective section, assuming 2 inches as distance from bottom of beam to center of steel, =

(Continued to page 156.)



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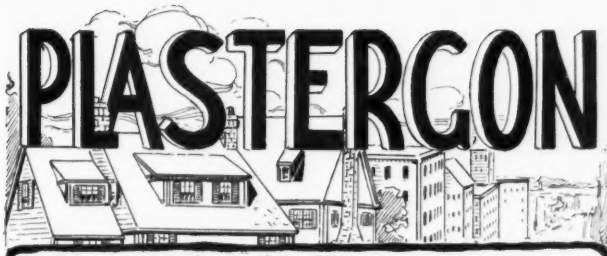
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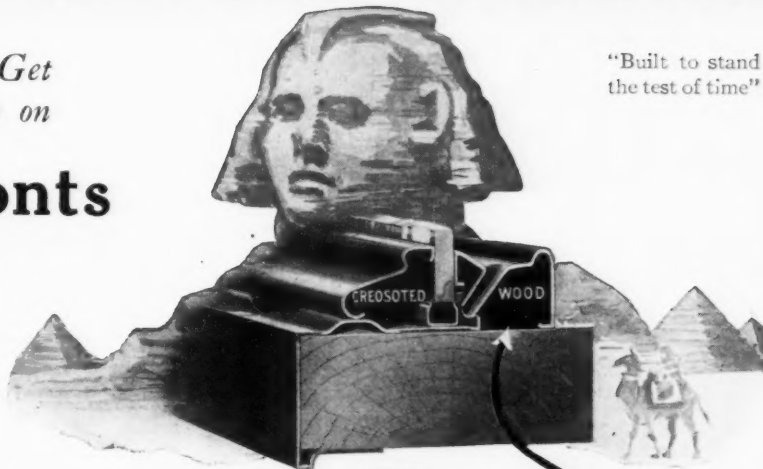


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"We're not satisfied unless you are."

(Continued from page 154.)

$$v = \frac{V}{b \frac{7}{8} d} = \frac{7,250}{12 \times \frac{7}{8} \times 16} = 43 \text{ pounds per square inch.}$$

This is so little over the allowable that the size will not here be revised.

The bending moment must now be found, this equals
(10,000 + 4,500) \times 20 \times 12

$$M = \frac{435,000}{8} = 435,000 \text{ in. lbs.}$$

The allowable unit stresses used will be:

f_s = tension in steel = 16,000 pounds per square inch

f_c = compression in concrete = 650 pounds per square inch.

The amount of steel required can be found by the approximate formula:

$$A_s = \frac{M}{f_s \times \frac{7}{8} d} = \frac{435,000}{16,000 \times \frac{7}{8} \times 16} = 1.94 \text{ sq. in.}$$

Four $\frac{3}{4}$ -inch square bars = 2.24 square inches.

The stress in the concrete can be found by the formula (approx.):

$$f_c = \frac{M}{\frac{1}{6} b d^2} = \frac{435,000}{512} = 850 \text{ lbs. per square inch.}$$

This indicates that the concrete is overstressed and that the matter of shear does not govern the design; however, on short spans and heavy loads it will govern. A new depth of beam will, therefore, have to be chosen and the bending moment recomputed.

A new total depth of 21 inches will be assumed.

New dead weight of beam = 5,240 pounds.

$$\text{Bending moment} = M = \frac{(10,000 + 5,240) 20 \times 12}{8} = 457,200 \text{ inch pounds.}$$

$$A_s = \frac{457,200}{16,000 \times \frac{7}{8} \times 19} = 1.73 \text{ square inches of steel required.}$$

Three $\frac{3}{4}$ -inch square bars = 1.68 square inches, which is close enough.

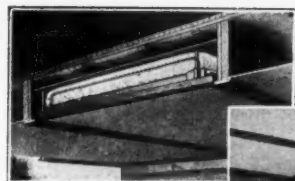
$$f_c = \frac{457,200}{\frac{1}{6} 12 \times 19^2} = 635 \text{ pounds per square inch, which is within the allowable.}$$

It will be well for practical reasons to place at least two small bars in the top of the beam, in this case two $\frac{3}{8}$ -inch square bars will do (see Fig. 1).

If a double span lintel continues over the center support is used, practically the same steel should be used in the top of the beam over the center support and extending at least one-fourth of the span on each side of support, as is used in the bottom.

In Fig. 2 this is accomplished by adding two $\frac{3}{4}$ -inch square bars over the center support in addition to the $\frac{3}{8}$ -inch square bars which lap at the center to make them continuous.

The bottom bars should rest on support for a distance of at least 6 inches.



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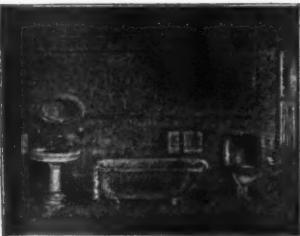
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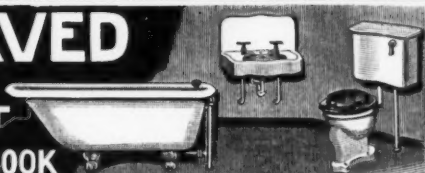
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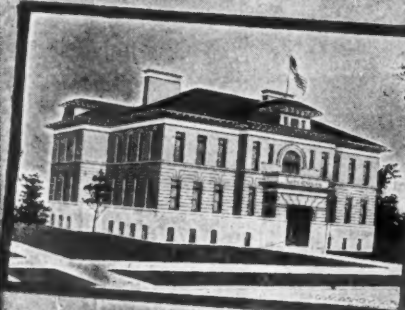
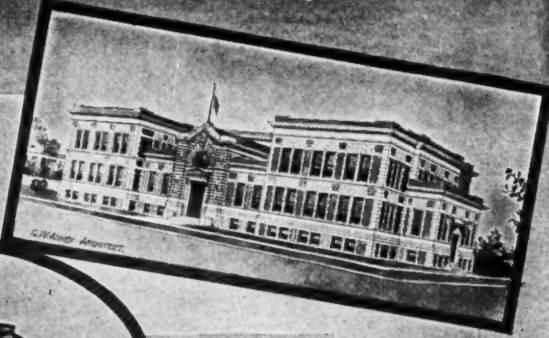
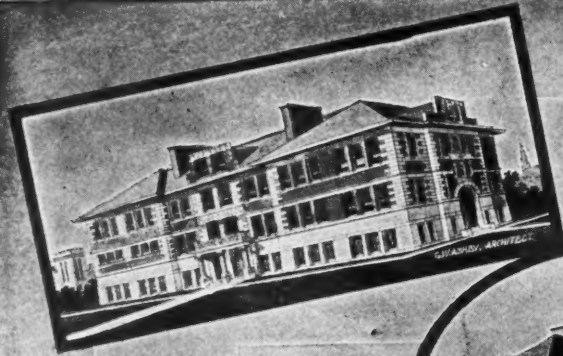


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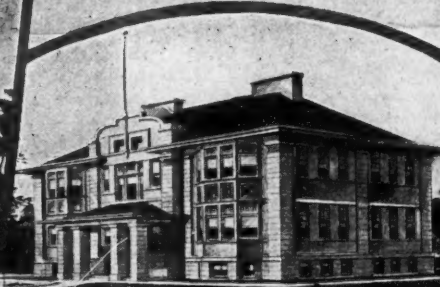
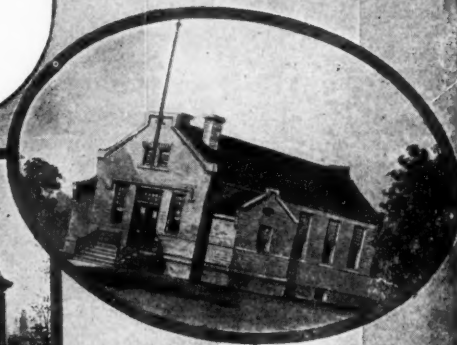
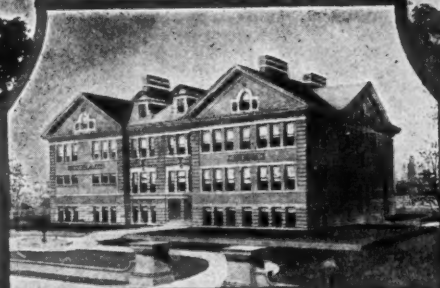
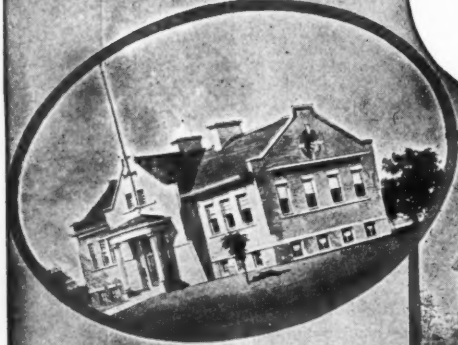
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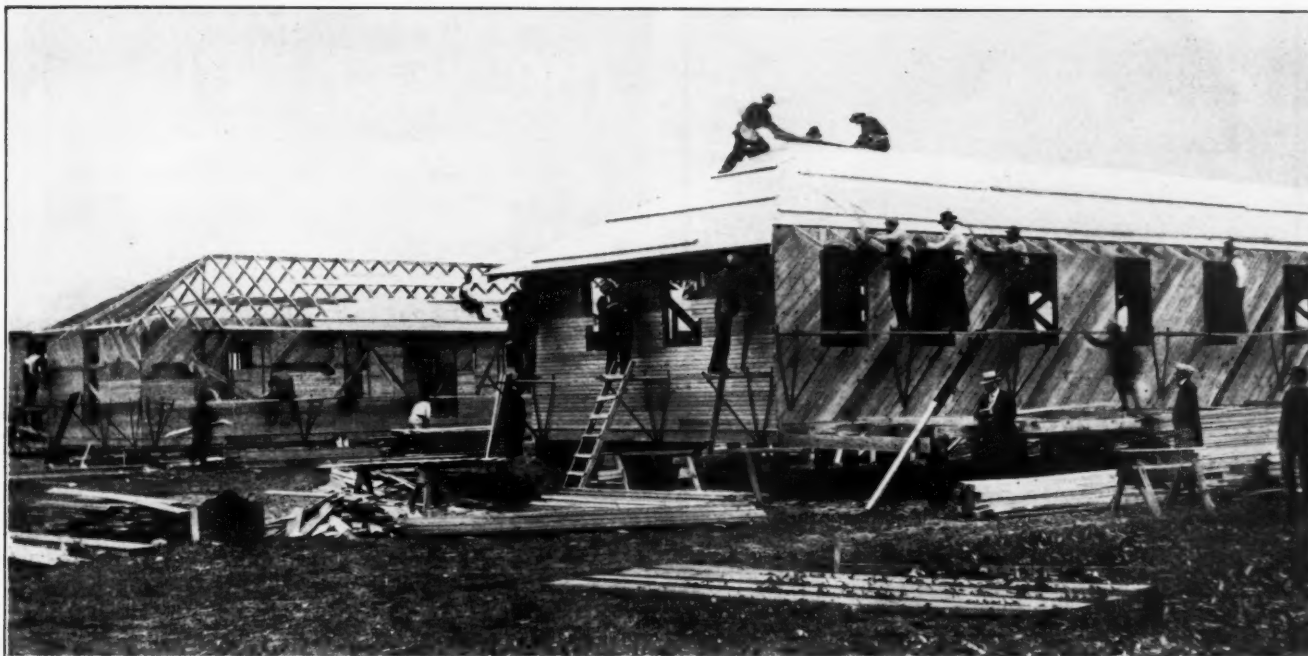
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"RELIABLE" FOLDING SCAFFOLD BRACKETS

play an important part in putting through the greatest building program the world has ever seen. At each of the sixteen great cantonments which Uncle Sam is building for the training of our new National Army thousands of "RELIABLE" Brackets are in daily use. The photograph above shows "RELIABLE" in use at one of these camps. "Somewhere in America." Not less than four gross (576) and in most cases from 900 to 1000 "RELIABLE" Brackets are in use at each camp. At one camp the cost of lumber for staging was figured at \$5,500.00. Their "RELIABLE" Brackets cost them \$2,640.00, thus saving in material alone \$2,860.00, or more than their cost. Figuring time saved at the rate carpenters are paid on these jobs, you can get a good idea of the amount saved by the wise buyers on this job. **DON'T FORGET THIS—"RELIABLE" Brackets were purchased for this work by the shrewdest buyers in the country ONLY after they had successfully proved in COMPETITION their great superiority in strength, safety and speed over all other equipment of this kind. "RELIABLES" WILL SAVE YOU MONEY AS WELL AS UNCLE SAM. See your dealer today or write us direct for prices.**

ELITE MANUFACTURING COMPANY, Dept. "E," Ashland, Ohio, U. S. A.



—The key to Confidence

"Safety First"

SCAFFOLDS

Assure absolute protection to yourself and your workmen. You cannot fall off.

They can be attached as fast as one man can hand them to another man, as there are no holes to bore or nails to drive. It is not even necessary to have your building sheathed. Equipped with tool shelf. Folds up flat for storing.

Write for catalog and trial proposition.

John Faragher, 811 So. Brooks St., Madison, Wis.

Make Your Basements WATER TIGHT

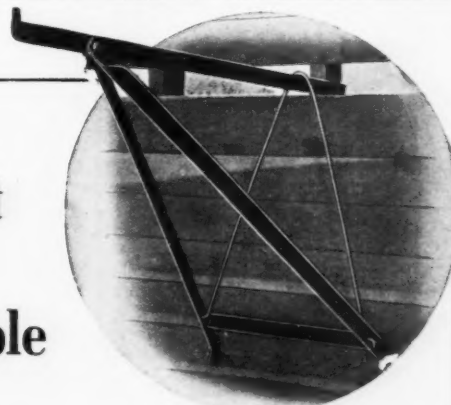
by using Bitu-Mortar Waterproofing Compound. Liquid, for waterproofing cement coatings—powder for waterproofing mass concrete—dampproofing, for interior surfaces of masonry walls. Inexpensive and everlasting. Write for our catalog.

The Bitu-Mortar Waterproofing Co., Inc.

BITU-MORTAR
WATERPROOFING
WATER-RESISTANT PERMANENTLY

Engineers, Contractors and Manufacturers
340-344 East 27th Street New York, N. Y.

Not
a
wobble



No, sir; just as firm and solid as old Mother Earth. There can't be anything safer than Trouble Savers.

They are all a builder could want in a scaffolding proposition. They will last as long as you are in business, regardless of the hard usage you may give them. They are erected quickly—you can erect as much Trouble Saver Steel Scaffolding in five minutes as you can wooden scaffolding in five hours. They fold up compactly and a big number of them can be stored in small space.

ORDER SOME FOR 30-DAY FREE TRIAL

So sure are we of this scaffolding that we particularly urge you to take advantage of our 30-Day Free Trial Offer, all expense and responsibility of same while you are testing them being assumed by us. You won't send Trouble Savers back—you'll order more of them!

THE STEEL SCAFFOLDING CO.
EVANSVILLE, INDIANA

No Replacements



ONLY two years after building this home, the owner had to tear out his wooden porch columns because of splitting and rotting and replace them with

UNION METAL COLUMNS

"The Ones That Last A Lifetime"

Why make yourself this trouble and expense which is absolutely unpreventable with wood columns.

Union Metal Columns with their shafts of heavy steel cannot crack or rot.

Write for Booklet No. 91

The Union Metal Mfg. Co., Canton, Ohio

HORNET MANTELS

The salability of any house is doubled when you show the purchaser the beauty and comfort of

Hornet Mantels

They add 100% to any interior.

The model shown here gives an idea of our line and prices. It is offered in selected Oak or Birch, Mahogany finish, Piano Polish. Stands 7 feet high. Note beveled mirror, enameled tile and grate.

Priced at Only \$29.00

Study our full line of Gas Logs, Fire-sets and Screens in helpful catalog. Gives directions for installing. Get this book for future reference.

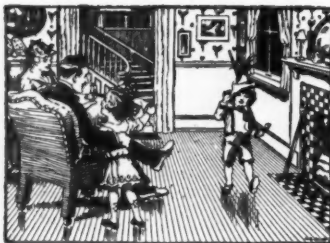
**Hornet
Mantel Co.**
1147 Market Street
St. Louis, Mo.

Below:
One of 40
styles
shown in
Our Big
FREE Catalog



World's Largest Mantel House

Beautiful Oak Floors — Everywhere WHY??



BECAUSE—

- Oak Flooring by right of superior merit and conquest is "America's Best Flooring".
- Women prefer Oak Flooring for the reason it is rich and cheerful in color, and offers unlimited possibilities to give the home that coveted touch of elegance.
- Oak Flooring is Distinctive, Beautiful and Substantial, three very vital reasons why so much Oak Flooring is in use today.
- Service and satisfaction are assured if Oak Floors are used.
- Of all the hardwood flooring in use today, Oak stands pre-eminent for color, texture and durability.
- Keeps the "For Rent" and "For Sale" signs off of the property. Landlords know what is best in flooring.

See our Page 379—1917 Sweet's Catalog.

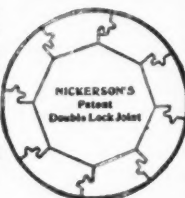
Write for Booklet—"America's Best Flooring."

**Oak Flooring Service Bureau, 1603 Union Trust Building
CINCINNATI, OHIO**

THE BEST COLUMNS

for Porch, Interior and Pergola use the
NICKERSON Patent DOUBLE LOCK JOINT
THEY CANNOT COME APART

We Specialize on Detail-work. "Vignola" is our Standard for proportions when Architect's details are not furnished.



Clinch you Trade by giving them the very best Columns. Ours have the best Construction and correct shape.

All kinds of interior trim to detail.
Write for Catalogue No. 4.

NICKERSON MFG. CO.
KNOXVILLE — TENNESSEE
Members Knoxville Builders' Exchange



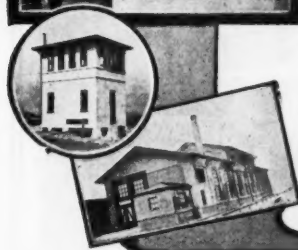
See Our New Designs in

Some new attractive modern Grilles, Parlor Columns, Colonnade Openings, Consoles and Sideboards.

All of our work is made from strictly kiln-dried lumber.

Chicago Grille Works,

Loomis & 21st Sts.
CHICAGO, ILL.



THE buildings you erect will be proof against fire, rodents, sound and decay---cracks in walls and ceilings will be prevented---maintenance expense reduced to minimum---and insurance cost lowered by using Berger's

Metal Lumber

Use of this pressed steel construction assures safety, economy and permanency. Depreciation in value can be forgotten. Easy and simple to erect, resulting in rapid construction. Each member is cut at the factory, in accordance with plans, and reaches the building ready for placing. The illustration shows a group of the Detroit River Tunnel Company's Towers, erected with Berger's Metal Lumber.

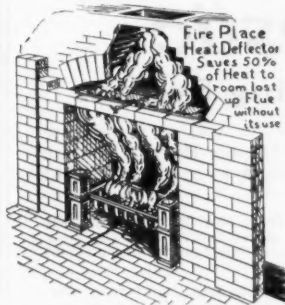
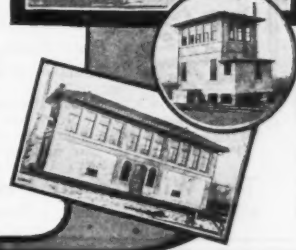
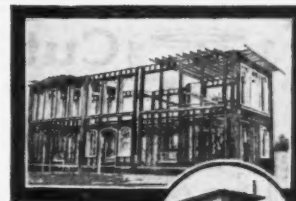
Send for Bulletin L. A. B.



The Berger Manufacturing Co., Canton, O.

Branches: Boston New York Philadelphia Chicago St. Louis
Minneapolis San Francisco

Export Department: Berger Bldg., New York City, U. S. A.



EVERY fireplace should be provided with a heat deflector having a sliding damper operated by knob from face of mantel. Its cost is saved in mason's labor and 50% more heat.

Write for descriptive circular and price. Our catalogue "N" shows And-

irons, Fire-baskets, Fire-sets, Spark-guards, etc.

Heitland Grate and Mantel Co.

No. 136 N. Fifth St.

Quincy, Illinois

"BEAUTIFUL BIRCH FOR BEAUTIFUL WOODWORK"



**There's a New birch Book Ready
Send Today for Your FREE Copy**

This is a beautiful and authoritative book about "Beautiful birch," "America's Favorite Cabinet Wood." You'll enjoy reading it. It contains a mass of valuable information about birch trim, birch (veneered) doors, birch floors and birch furniture. The illustrations are clever, and will suggest many new, up-to-date ideas for up-to-date men who build up-to-date houses.

We will send along some sample birch panels in different finishes (including white enamel), with your book. **SEND NOW.**

Northern Hemlock & Hardwood Mfrs' Ass'n.
201 F. R. A. BUILDING OSHKOSH, WISCONSIN

Fire-Proof Doors

Metal and Metal-Covered

Standard Sizes in Stock
of All Designs

Agents Wanted

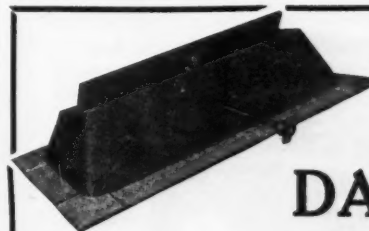
Write for Booklets
and Price Lists —
also our Agent's
Proposition.



A. C. Chesley Co.

275 Rider Ave.

New York City, N. Y.



Improved Fireplace DAMPERS

Stover Dampers make the building of fireplaces easy. The labor saved by their use reduces the cost considerably.

Catalog 1590-X describes these and other new style dampers in detail, gives valuable suggestions as to fireplace construction and shows a large assortment of other fireplace fixtures.

If you build fireplaces, send for this catalog. *It's free.* We manufacture builders' and household hardware, windmills, feed mills, gasoline engines.

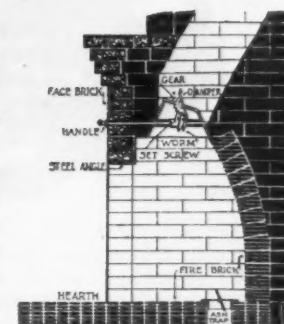
Stover Mfg. & Engine Co.


725 East Street

Freeport, Illinois

STOVER MFG. & ENGINE CO., 725 East St., Freeport, Ill.
Send us Catalog 1590-X.

NAME.....
BUSINESS.....
CITY.....STATE.....





Cut Coal Cost

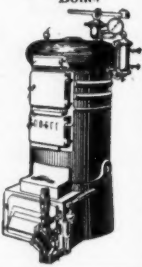
$\frac{1}{2}$ to $\frac{2}{3}$ Guaranteed

Yes, absolutely guaranteed. Over 40,000 Williamson UNDERFEED Furnace and Boiler users are enjoying UNDERFEED saving and comfort season after season.

Free Book Tells How

A postal brings it to any carpenter, builder or contractor. Book pictures and explains it all. Write for it NOW and learn how you can guarantee this great saving to your customers.

The Williamson Heater Co.
917 Fifth Ave. Cincinnati, O.




The Superior Heating Boiler for Hot Water Vapor or Steam

The Modern Method of heating your residence. Insures comfort in every corner of the house in the coldest zero weather.

It Will Pay You to investigate this Boiler before buying.

Our Estimates and Plans are Free

"A Complete Line of Plumbing and Heating Material"

DUPLEX MANUFACTURING CO.

Send for Free Catalog SUPERIOR, WISCONSIN



Majestic

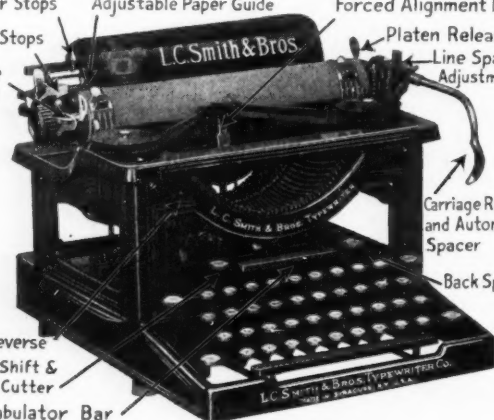
Duplex Heating System

IT will be well worth while for you to investigate thoroughly the Majestic Duplex Heating System before you decide what heating system to put in that new house or store.

The Duplex draws the cold air from the floor through the cold air duct while pure warm air is discharged from the main face of the register. And the register itself makes an excellent bench or table.

The Majestic Duplex furnishes more heat, uniformly distributed and at two-thirds the cost of the old-fashioned methods. Easily installed in new or old home. Write today and get the facts about this modern, efficient heating system.

The Majestic Co., 702 Erie St., Huntington, Ind.



Labels: Tabulator Stops, Adjustable Paper Guide, Forced Alignment For, Marginal Stops, Carriage Release, Platen Release, Line Space Adjustment, Carriage Return and Automatic Spacer, Back Spacer, Ribbon Reverse, Ribbon Shift & Stencil Cutter, Tabulator Bar.

I want, through this advertisement, to establish as friendly business relations with you as I possibly can. I want you to realize also, that it is my earnest effort and intention to give you full honest value for every dollar that you spend with me. This is the only way I can succeed. My advertisement has appeared in the leading magazines continuously for more than four years.

I am building up my business on the foundation of good value and square dealings. I am saving thousands of satisfied customers thousands of dollars, by supplying perfect—late style—visible writing—typewriters, at remarkably low prices.

All my transactions are handled throughout by personal correspondence. I assure you every courtesy and consideration, in your dealings with me. Your order will have my prompt, careful, personal attention. I will be glad to do business with you.

Harry A. Smith

ALL LATEST IMPROVEMENTS

Typewriter Sensation

Free TRIAL—Use As You Pay

Send me only \$2.50 a month until the low total price of \$48.80 is paid, and the machine is yours

STANDARD VISIBLE **L.C. SMITH**

This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay \$2.50 a month and own one. Think of it—Buying a \$100.00 machine for \$48.80. Cash price, \$45.45.

Perfect machines, standard size, keyboard of standard universal arrangement—universally used in teaching the touch system. The entire line of writing completely visible at all times, has the inbuilt tabulator, with billing device, the two color ribbon—with automatic reverse and key controlled shift, automatic flexible paper fed—automatic paper fingers, the back spacer—ball bearing carriage action—ball bearing shift action—ball bearing type bars—in fact, every late style feature and modern operating convenience. Comes to you with everything complete, tools, cover, operating book and instructions, ribbon, practice paper—nothing extra to buy. You cannot imagine the perfection of this beautiful reconstructed typewriter until you have seen it. I have sold several thousand of these perfect, latest style L. C. Smith machines at this bargain price, and every one of these thousands of satisfied customers had this beautiful, strictly up-to-date machine on five days' free trial before deciding to buy it. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter you ever saw, you can return it at my expense. You won't want to return it after you try it—you cannot equal this wonderful value anywhere.

YOU TAKE NO RISK—PUT IN YOUR ORDER NOW

When the typewriter arrives deposit with the express agent \$8.80 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw keep it and send me \$2.50 a month until my bargain price of \$48.80 is paid. If you don't want it, return it to the express agent, receive your \$8.80 and return the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it. It is standard. Over one hundred thousand people own and use these typewriters and think them the best manufactured. The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly. There is no red tape. I employ no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full \$48.80 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have. Do not send me one cent. Get the coupon in the mails today—sure.

HARRY A. SMITH, 300-231 N. Fifth Avenue CHICAGO

H. A. SMITH
Room 300
231 N. Fifth Avenue
CHICAGO

Ship me the L. C. Smith, F. O. B. Chicago, as described in this advertisement. I will pay you the \$40.00 balance of the SPECIAL \$48.80 purchase price, at the rate of \$2.50 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

Name.....
Address.....



Get This Man, Mr. Builder

He needs a good lighting system.

He has been wanting good light but does not know of a dependable system. He is tired of fussing with his old-fashioned lamp, which requires frequent attention—cleaning, trimming, filling, etc.

You can show him how he can have a brilliantly illuminated home and abundant cooking fuel at moderate expense.

SELL HIM A VICTOR Acetylene Lighting System

It is an easy system for you to install. It is an easy system for the user to operate, as there are absolutely no adjustments to make. Simple, fool proof—nothing that can get out of order.

You can show your client—of the smoky kerosene lamp—how he and his family can get some real enjoyment out of life by having the evening hours pleasantly lighted by a modern, efficient, dependable lighting system. You can explain the cooking fuel economy to his wife.

The Victor Lighting System is simply constructed: safe, extremely durable. It works automatically making gas only when lights are turned on. It is outdoors, away from the house and is protected against temperature changes by an outer jacket.

Detailed explanation is contained in our catalog, Victor Out-door Above-ground Acetylene Generators. Send for it and the testimonial circular.

Moore Bros. Lightning Rod Company
Maryville, Missouri



The Victor Generator

Sell Protection from Lightning

with every building you build,
and make that extra profit.

Property owners are awake to the terrible Lightning hazard, and most buildings are now protected—sooner or later—from Lightning. Even the Government has at last taken up the subject and warned the farmers of the country especially to protect their property from the Lightning stroke.

The best time to apply Lightning Conductors is when the building is built, and the Contractor or Builder is the logical man to handle the job.

The Shinn System is the only one Bonded to Protect. Ask us how we cooperate with you.

Shinn Mfg. Company

W. C. Shinn President

General Offices: 1635 Monadnock Bldg.
CHICAGO, ILL.

Factories: Niles, Mich.; Windsor, Ontario
Lincoln, Neb.; Minneapolis, Minn.



Lightning Can't Strike if SHINN Gets There First

Was \$100
Now \$49

NEW OLIVER NINE FOR HALF PRICE

The Oliver Typewriter Company created a nationwide revolution on March 3rd when it announced its new plans. No more expensive sales force of 15,000 men! No high office rents in 50 cities! No idle stocks!

But dealing direct with the people—cutting out all middlemen. The old plan cost the buyer a needless \$51 per machine. We now save that and give it to you. So the new price for standard \$100 Oliver is \$49.

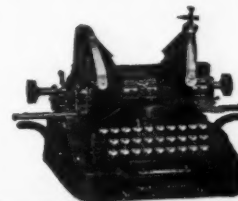
The Oliver Nine—our latest model—direct from the factory to you. It is the finest, the costliest, the greatest typewriter ever built. Used by the leading concerns.

Who would ever pay over \$49 again for a new typewriter? Especially when we not only make a new low price, but also give the lowest terms—about 10 cents per day—over a year to pay.

STARTLING
FACTS

Contractors' Special!

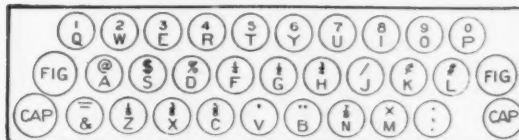
For contractors, our Special Oliver Nine is unbeatable. Besides being the best for ordinary correspondence, none can equal it for figure work. It has the characters you need, as shown on the keyboard herewith.



Over 600,000 Sold

And remember, carbon copies of everything written, for your records.

Our new price and terms ought to sell an Oliver to every contractor. Longhand writing will be out of date among progressive men.



Free Trial—No Money Down FREE BOOK

Just send for our amazing disclosure entitled "The High Cost of Typewriters—The Reason and the Remedy." Then ask for a trial. You are not put under the slightest obligation. It is our new-day way of selling. It saves money for both of us. You act as your own salesman—the Oliver itself must convince you. You pocket the \$51.

Send in the coupon below today for one copy of this sensational book that exposes the secrets of the typewriter world. (609)

The
High Cost Of
Typewriters

The Reason
and the
Remedy

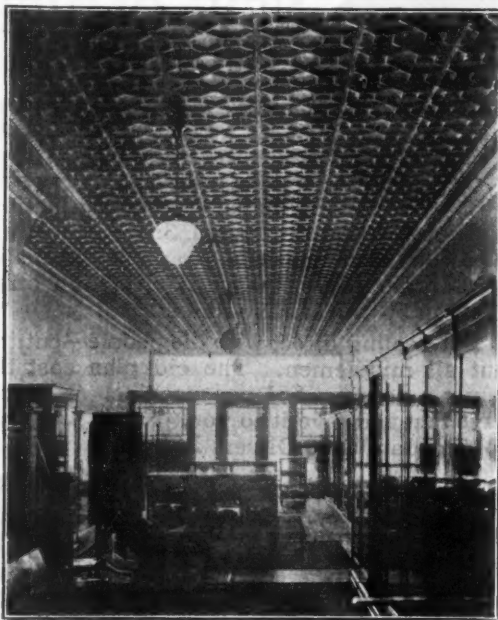
THE OLIVER TYPEWRITER COMPANY
240C Oliver Typewriter Bldg., Chicago

Mail me your book and farther information—all free and without obligation to me.

Name

Street Address

City State



Berger's "Classik" Steel Ceilings
in C. Adams Store, Toledo, Ohio

Give Proper Attention to Your Ceilings

PROBABLY nothing adds to or detracts from the appearance of a room so much as the ceiling.

A streaked, cracked and dirty ceiling is an "eye-sore" not only to the building owner, but visitors and customers as well. On the other hand, the clean, attractive, substantial appearance of

**"BERGER'S"
Classik
STEEL CEILINGS**

lends character and distinction to any interior.

Now, which type of ceiling are you giving your clients? One stands for ultimate dissatisfaction and maintenance expense; the other stands for permanent beauty, sanitation, safety and durability—all at reasonable cost.

You'll find Berger's "Classik" Steel Ceilings easy to erect—the improved bead and construction eliminating tamping and calking, saving 25% to 40% in erection costs.

Install them in your next building. Hundreds of artistic designs from which a selection may be made.

Ask for "Classik" Book D. A.

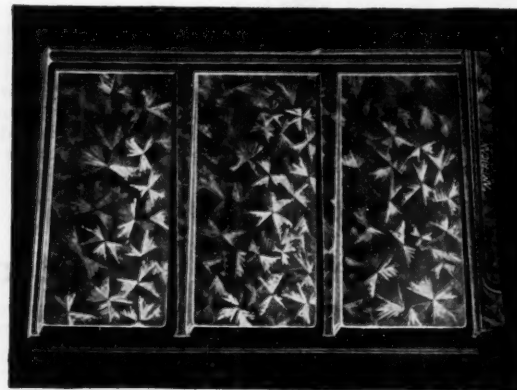
The Berger Mfg. Co., Canton, O.



Branches: Boston, New York, Philadelphia,
Chicago, St. Louis, Minneapolis, San Francisco
Export Department:
Berger Building, New York City, U. S. A.

AMERICAN Metal Shingle

Fire—Water—Lightning Proof



The Last Word in Metal Shingles

Protective Durable Economical

Effective in Appearance

Has No Equal—Send for Samples

Especially adapted for Residences, Bungalows, Churches,
Schoolhouses, Chapels and Buildings in general

Milwaukee Corrugating Company
Branch at Kansas City, Mo. **MILWAUKEE, WIS.**

USE THE Kanneberg

**FREE SERVICE
For Builders**

A ceiling design of Steel for a butcher shop would be hardly suitable for a bank or a theatre, yet if only a few designs are available such a mistake is liable to happen. To prevent such errors we offer Kanneberg Service Free of charge to suggest appropriate designs in harmony with the surroundings at the most reasonable prices. We do not need an architect's drawing—the roughest sort of a layout will do. Send us a drawing of your next job and let us show you the possibilities of Decorative Sheet Metal. It won't cost you a cent or obligate you in any way.

"Decorative Stamped Metal"
is the name of our large handsomely illustrated 114 page Book on Steel Ceilings.

Your Free Copy is waiting for you.

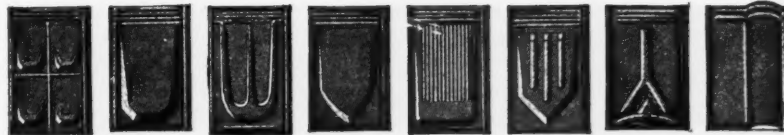
We also manufacture Metal
Shingles, Roofing, Store Fronts,
Skylights, Ventilators, in
fact everything in Sheet
Metal.

**The Kanneberg
Roofing and
Ceiling Co.**
29-31
Robin Ct.,
S. E.
Canton,
Ohio

Come to Us for Everything in Sheet Metal

WALTER'S & COOPER'S METAL SHINGLES

*The
Shingles
That
Last*



*The
Shingles
That
Last*

The Most Complete Line of Designs

Made in Painted Tin or Genuine Re-dipped Galvanized Tin

SOLD AT THE RIGHT PRICE

May we send you full-size samples and prices?

NATIONAL SHEET METAL ROOFING CO. 339-345 GRAND STREET
JERSEY CITY, N. J.



Roofed with
Winthrop Tapered
Asphalt Shingles
The ONLY Kind
Tapered Like Wood

R. G. Castleman, 120 W. 46th St.,
Bayonne, N. J., writes:—

"I am enclosing a small picture of our house, which is claimed to have the finest appearing roof in the vicinity. We used red Winthrop Tapered Shingles on the roof and gray on the sides. The house was built in 1915 and there is not a sign of wear on the roof."

Contractor Agents Wanted. Write for sample shingle.

THE BECKMAN-DAWSON COMPANY
Asphalt Shingles

Factory: Argo, Ill.

1413 Y. M. C. A. Bldg., CHICAGO, ILL.

"SIGNED LUMBER IS SAFE LUMBER"

INSIST ON TRADE-MARKED "TIDE-WATER"

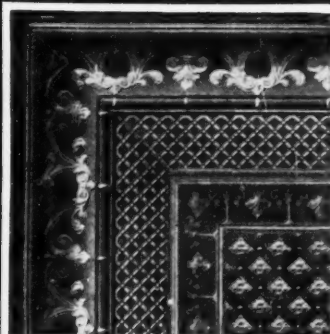
CYPRESS

LUMBER—BECAUSE IT'S "THE
GENUINE WOOD ETERNAL".

AND LASTS—AND LASTS—AND LASTS—AND LASTS

Look for this on every board—

Accept no Cypress without this mark.



Edwards'
Metal
Ceilings
and Walls

Here is a chance to build up an independent profitable business for yourself right at home. Many are now devoting their entire time to selling our metal ceilings and walls. Others have made big profits simply devoting part of their time to selling and applying our Metal Ceilings and Walls. No matter how you handle the proposition, the profit is in it, because the demand has already been created.

You Must Act Quick

Write us about your territory at once. This doesn't mean next month, or next week, or even tomorrow, but right now! One hour's delay may mean that someone else may be given your territory. Send for our special agent's proposition and large illustrated Ceiling catalog of attractive sales-making designs.

THE EDWARDS MANUFACTURING CO.

"The Sheet Metal Folks"

401-417 Eggleston Ave. CINCINNATI, OHIO

World's Largest Manufacturers of Metal Roofing, Metal Shingles, Metal Spanish Tile, Metal Ceilings, Metal Garages, Portable Buildings, Metal Lockers, Rolling Steel Doors, Partitions, etc. 3

May We Send
You This Book
Free ?



It's brimful of helpful ideas on roofing of all kinds—wood, tin, tile, slate.

The 1917 edition of "Concerning that Roof" is a book that should be in *your* hands, because it gives vital facts about materials—the effect of fire, water, the elements, and the flight of time.

Cortright Metal Shingles

are a good proposition for every contractor. They are easily laid—any mechanic can do the work rapidly. All Cortright roofs are fire, lightning and storm proof.

Cortright Metal Roofing Co.
PHILADELPHIA AND CHICAGO



The Northwestern Terra Cotta Company is one of over 200 leading firms maintaining permanent exhibits at this great building show.

HERE is a real service for contractors and architects --- a service that costs nothing but means a great deal to those who have learned to make free use of it.

Building Material Exhibit

Entire Second Floor, Insurance Exchange Bldg.

■ ■ 175 West Jackson Boulevard, Chicago ■ ■

Remember, if it is not convenient to come in person to see this great permanent building show, you can still take advantage of the im-

***“Look
Before
You
Build”***

mense time saving and labor saving it affords by sending your plans and specifications at our expense so that we can obtain for you, without charge, figures and information on all material and equipment. Use this service on your next building job, whether it be GREAT or small.



The Dominating Trademark for 46 Years

The Round Oak Moistair Heating System, made by the makers of genuine Round Oak Stoves, has been synonymous with **super-quality** in heating service for *nearly fifty years*. Due to many exclusive health, economy and labor-saving features, it has come to be the unvarying choice of those who WON'T compromise on quality or experiment with their health. This is why Architects, Contractors, Builders everywhere are specifying the

Five Star Points of Round Oak Supremacy

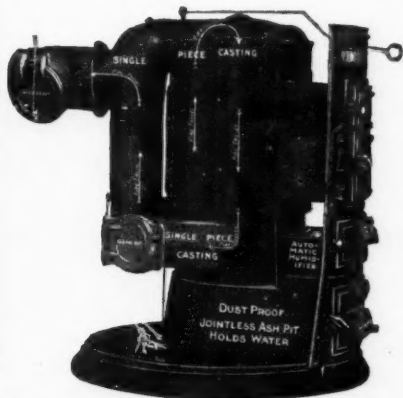
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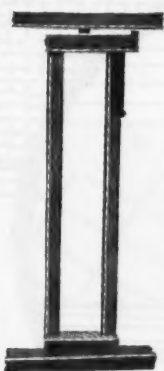
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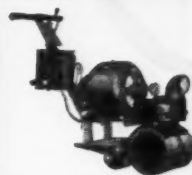
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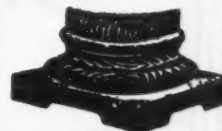
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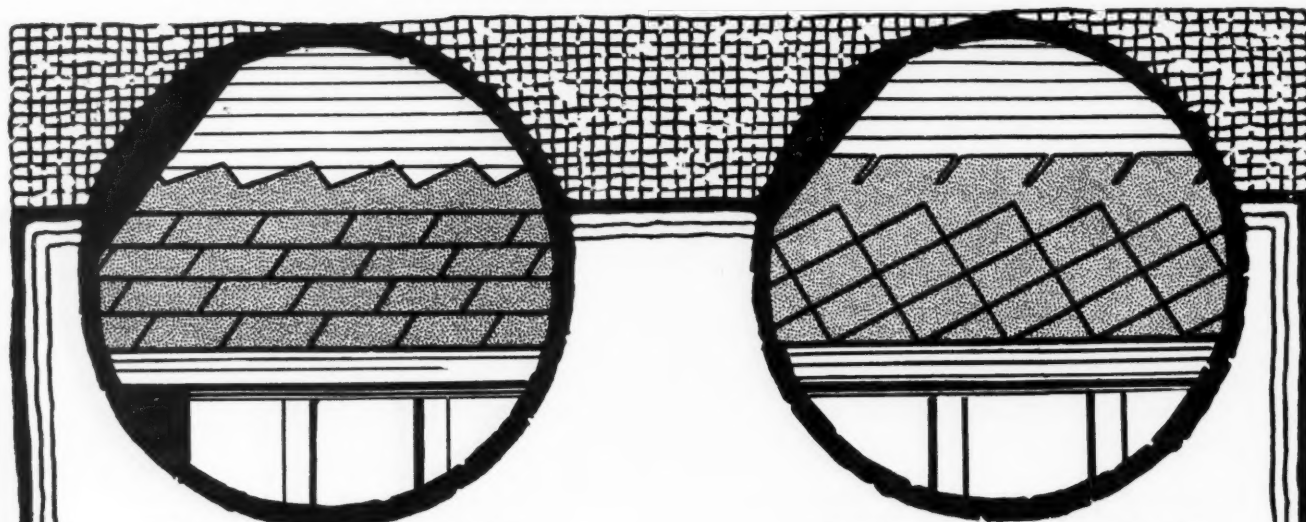
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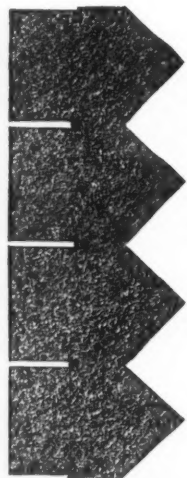
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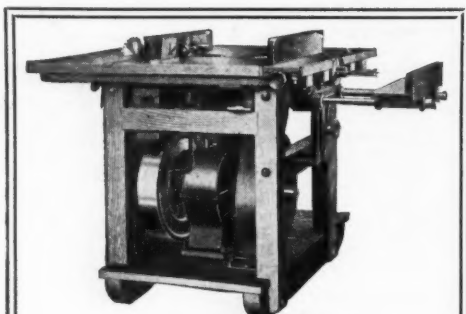
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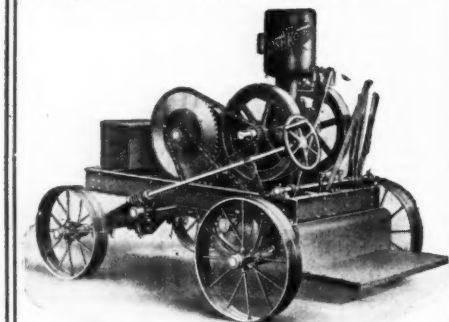
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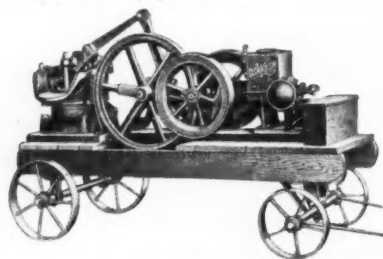
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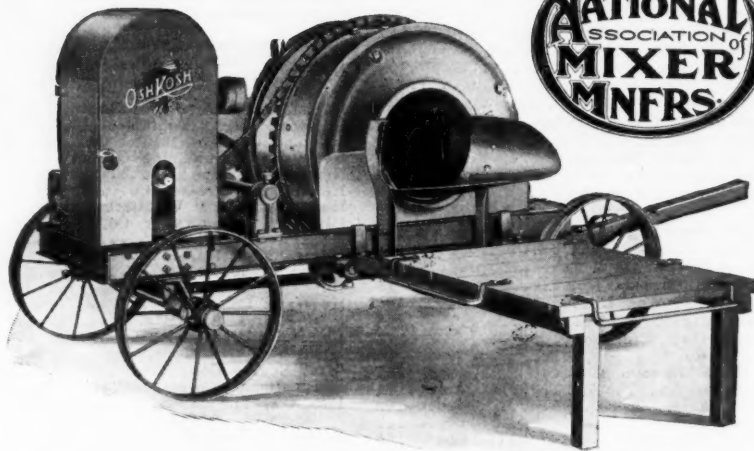
Oshkosh Back Filler

One user wrote us that this machine would do the work of thirty men. We know that it will cut the cost of back-filling 75%. It works, too, where teams can't work. It's a self-tractor and moves forward as the "fill" is completed and has plenty of reserve power furnished by a 6 H. P. Gasoline Engine. Requires but one man to operate machine and two men to work the scoop.



Oshkosh Trench Pump

This pump will run a full ten-hour day without attention after starting for less than thirty-five cents. The pump is of the rubber diaphragm type and power is furnished by a 2 H. P. gasoline engine. Guaranteed to have sufficient power and to be dependable. Furnished on skids or trucks as desired.



THE Oshkosh Low-Loading Mixer is a top-notch quality product—that's been proven—and it renders uninterrupted service—that's been proven, too. But a time comes in the life of every machine when it requires adjustment, some little part becomes worn or accidentally broken. That's the time Oshkosh Service proves its worth. Every Oshkosh dealer can be depended upon to render the owner of an



LOW LOADING MIXER

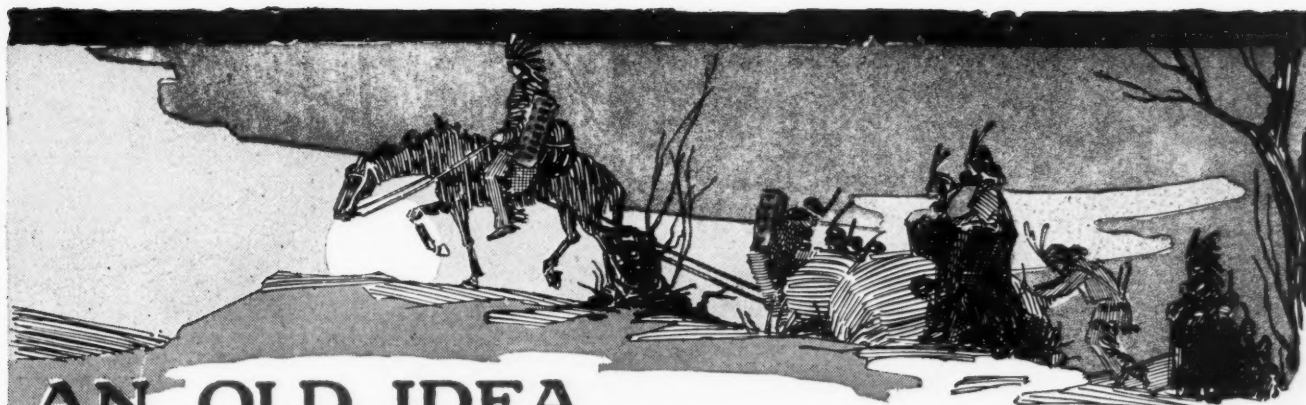
just the service he requires and at the time he requires it. That's the big broad meaning of Oshkosh Service.

To mix and deliver two batches a minute is quite a stunt with any other than an Oshkosh Low-Loading Mixer. But this big little mixer does it often, for its "four-motion" mix is very rapid and exceedingly smooth and thorough. Its easy loading, direct from wheelbarrow, and its low discharge, directly into the wheelbarrow, insures a remarkable saving in time and labor.

There's an Oshkosh Mixer for your particular needs. Write today for catalog and book "Facts and Figures." There are other Oshkosh products of equal worth of the same Oshkosh quality. Mention any other described on this page that you are interested in and we will include descriptive literature.

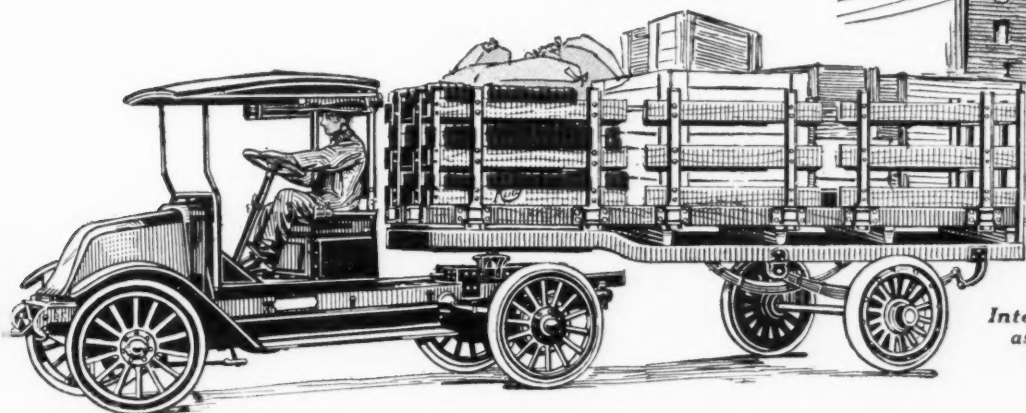
Liberty Bonds Accepted in Payment at Face Value

Oshkosh Mfg. Co., 92 Amber St., Oshkosh, Wis.



**AN OLD IDEA
PERFECTED**

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TRAILER
ANN ARBOR
MICH.



*International Truck used
as Tractor for 3-Ton
King Semi-Trailer*

The Trailer Idea is not new. The Indian understood that his pony could pull more than it could carry. The paleface is not above copying the trailer idea--developing it with careful ingenuity to its present excellent expression---**The King Trailer** and Semi-Trailer.

¶ The King Trailer Company builds Trailers and Semi-Trailers for every business need: Light trailers carrying 1000, 1200 and 1500 lbs.; Big trailers, known to the trade as Semi-Trailers, with carrying capacities of 1½, 3, and 5 tons. Good honest material put together by competent workmen makes the King Trailer the superb vehicle that it is. Quality from tire to top---solid rubber tires guaranteed 7000 miles---artillery wheels with second growth hickory spokes---ball bearing axles---bodies of best hardwood, in all designs. Dump Semi-Trailers for road work---Stake Semi-Trailers for draying and hauling farm and dairy products---Box Semi-Trailers for loose grain and builders' supplies---Van Semi-Trailers for moving and storage business---Light trailers for every imaginable use---Trailers for the outdoor man, for the plumber, painter, and plasterer. **It's the famous King Line.**

Investigate it.

To Dealers and Jobbers: You will be interested in our free demonstration offer. You should inform yourself thoroughly regarding King Trailers. The coupon is our tip to you that there's profit in your territory. Send it today.

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Coupon

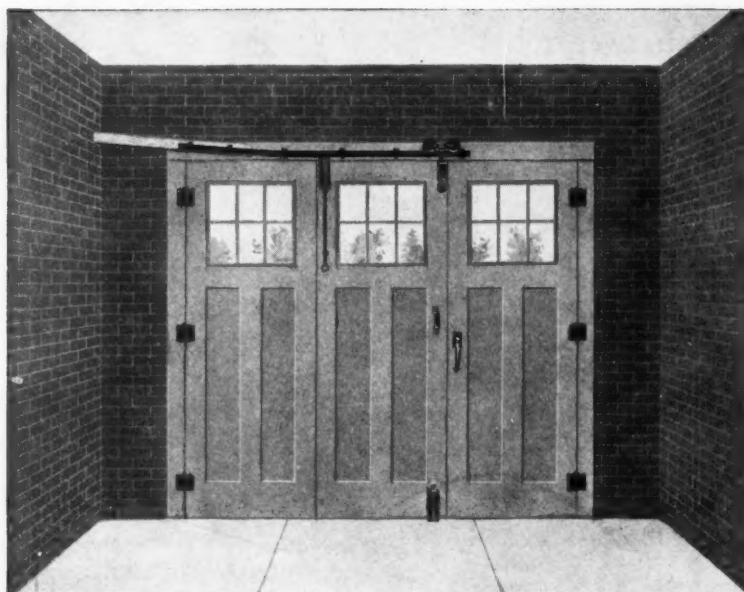
King Trailer Co.,
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Gentlemen: Please
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and descriptive literature
relating to the King Trail-
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Wheels, together with the prices.

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Address.....
(Dealer) or (User)

Business.....



Inside view showing our new No. 805 Garage Door Set. As the doors open inward, no snow or ice interferes. Doors swing into jamb against stops.

SOMETHING NEW!

—our latest accomplishment in garage door sets!

Here is the last word in garage door equipment that will give you the greatest efficiency at the lowest cost---the cheapest possible combination and the easiest to operate. This new National Garage Door Set will make garage doors **slide**---**swing**---and **fold** with the least possible effort. A light push and the doors open quickly---easily. A light pull and they close compactly without binding or friction.

Doors are absolutely weathertight. Single door on one side can be opened without interference with double doors. Notice the small illustration at the left. Notice how the absence of structural iron work on the outside gives the front of the garage a neat compact and pleasing appearance.

Adjustable feature prevents sagging of doors. Doors are hung inside and lie flat against the wall when opened, thus requiring a minimum of space in the garage. Doors are adjustable in case of swelling or raising of cement floor. The Code Number of this set is 805. Set No. 805 includes:

No. 29 Latch; 1 only Swivel Hanger; 6-foot Braced Rail; $4\frac{1}{2}$ pair 4x4 inch Jap. No. 505 T. P. Butts; 1 only No. 820 Chain Bolt; 1 only No. 830 Foot Bolt; 1 only No. 5 Pull; 1 only $4\frac{1}{2}$ -inch No. 30 Safety Hasp.

No. 806 Set includes the same except that No. 27 Latch is used instead of 29. Both sets furnished in Japan finish. *Let us mail you our circular describing this set in full.*



National Manufacturing Company
Sterling, Illinois

